SEQUENCE LISTING

```
<110> Coverley, Dawn
<120> REPLICATION PROTEIN
<130> 9052-222
<140> PCT/GB03/05334
<141> 2003-12-05
<150> GB 0228337.2
<151> 2002-12-05
<160> 73
<170> PatentIn version 3.1
<210> 1
<211> 5
<212> PRT
<213> Homo sapiens
<400> 1
Asp Ser Ser Ser Gln
<210> 2
<211> 24
<212> DNA
<213> Homo sapiens
<400> 2
                                                                   24
gttgaggagg aactctgcaa gcag
<210> 3
<211> 8
<212> PRT
<213> Homo sapiens
<400> 3
Val Glu Glu Leu Cys Lys Gln
<210> 4
<211> 78
<212> DNA
<213> Homo sapiens
gccacccaca ccacgaagag atgtgtttgc ccacgttcca gtgcaggggt ggagcacagc
```

| ccggct | tgtt acagatat | 78 |
|----------------------------------|---------------------------------------|----|
| <210><211><211><212><213> | 32 | |
| <220> <223> | Primer | |
| <400> aacccc | 5 ctct tccgccgccc ccaatcgcaa ga | 32 |
| <210><211><211><212><213> | 32 | |
| <220> <223> | Primer | |
| <400> tcttgc | 6 gatt gggggcggcg gaagaggggg tt | 32 |
| <210><211><212><212><213> | 30 | |
| <220> <223> | Primer | |
| <400> aagcag | 7 acac aggeeeegga teggetgeet | 30 |
| <210> <211> <212> <213> | 8 30 DNA Artificial Sequence | |
| <220> <223> | Primer . | |
| <400> aggcag | 8 ccga tccggggcct gtgtctgctt | 30 |
| <210><211><211><212><213> | 29 | |
| <220> | | |

| <223> | Primer | |
|------------------|---------------------------|----|
| <400> | 9 | |
| | agtc acaggagcag acctgtctc | 29 |
| | | |
| | | |
| <210> | | |
| <211> | | |
| <212> | | |
| <213> | Artificial Sequence | |
| <220> | | |
| | Primer | |
| | | |
| | 10 | |
| aatctg | ctcc tgtgactgtg ccctgtctc | 29 |
| | | |
| <210> | 11 | |
| <211> | | |
| <212> | | |
| <213> | Artificial Sequence | |
| | | |
| <220> | | |
| <223> | Primer | |
| <400> | 11 | |
| | tcac aagttctacg acctgtctc | 29 |
| | | |
| | | |
| <210> | | |
| <211> | | |
| <212> | | |
| <213 > | Artificial Sequence | |
| <220> | | |
| | Primer | |
| | • | |
| | 12 | |
| aatcgt | agaa cttgtgacag acctgtctc | 29 |
| | | |
| <210> | 13 | |
| <211> | | |
| <212> | | |
| <213> | Artificial Sequence | |
| | | |
| <220> | Parimon | |
| <223> | Primer | |
| <400> | 13 | |
| | aagg attettette teetgtete | 29 |
| - J - | | - |
| | | |
| <210> | | |
| <211> | | |
| <212> | DNA | |

| | <213> | Artificial Sequence | |
|----|----------------|----------------------------|----|
| | <220> | | |
| | | Primer | |
| | 12237 | | |
| | <400> | 14 | |
| | | gaag aatccttgcg acctgtctc | 29 |
| | uuuguu | guag unococogog uccogococo | |
| | | | |
| | <210> | 15 | |
| | <211> | | |
| | <212> | | |
| | | Artificial Sequence | |
| | | | |
| | <220> | | |
| | | Primer | |
| ** | • | | |
| | <400> | 15 | |
| | aatctg | cagc agttetttee ecetgtete | 29 |
| | | | |
| | | | |
| | <210> | | |
| | <211> | | |
| | <212> | | |
| | <213> | Artificial Sequence | |
| | .000 | | |
| | <220> | Duiman | |
| | <223> | Primer | |
| | <400> | 16 | |
| | | aaga actgctgcag acctgtctc | 29 |
| | aaggga | aaga accegoug accegous | |
| | | | |
| | <210> | 17 | |
| | <211> | 18 | |
| | <212> | DNA - | |
| | <213> | Artificial Sequence | |
| | | | |
| | <220> | | |
| | <223> | Primer | |
| | | | |
| | <400> | • | |
| | cagtcc | ccac cacaggee | 18 |
| | | | |
| | -210- | 10 | |
| | <210> | 18 | |
| | <211> | | |
| | <212> | | |
| | < Z 13> | Artificial Sequence | |
| | <220> | | |
| | | Primer | |
| | ~2237 | 1 1 1 mC1 | |
| | <400> | 18 | |
| | | ctca gacccctctg | 20 |
| | JJ | J J | |

```
<210> 19
    <211> 25
    <212> DNA
    <213> Artificial Sequence
    <220>
    <223> Primer
    <400> 19
                                                                        25
    acacagacct ctccagagca cttag
    <210> 20
    <211> 19
    <212> DNA
<213> Artificial Sequence
    <220>
    <223> Primer
    <400> 20
    atggtgacct tcagggagc
                                                                        19
    <210> 21
    <211> 25
    <212> DNA
    <213> Artificial Sequence
    <220>
    <223> Primer
    <400> 21
                                                                        25
    tccttggcga tgtcctctgg gcagg
    <210> 22
    <211> 25
    <212> DNA
    <213> Artificial Sequence
    <220>
    <223> Primer
    <400> 22
                                                                        25
    tccctcctca acggctccat gctgc
    <210> 23
    <211> 25
    <212> DNA
    <213> Artificial Sequence
    <220>
    <223> Primer
    <400> 23
```

| cgtgggg | ggcg a | actt | gagc | gt to | gagg | | | | | | | | | | 25 |
|-------------------------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----|
| <210><211><211><212><213> | DNA | ficia | al Se | equer | nce | | | | | | | | | | |
| <220> <223> | Prime | ar | | | | | | | | | | | | | |
| <400> | | - | | | | | | | | | | | | | |
| gatgcc | | gtate | gggg | eg co | ggg | | | | | | | | | | 25 |
| <210><211><212><212><213> | | ficia | al Se | equer | nce | | | | | | | | | | |
| <220> | | | | _ | | | | | | | | | | | |
| <223> | Prime | er | | | | | | | | | | | | | |
| <400> tccgage | 25 ccct 1 | tcca | ctcci | tc to | ctgg | | | | | | | | | | 25 |
| <210><211><211><212><213> | | e | | | | | | | | | | | | | |
| <400> | 26 | | | | | | | | | | | | | | |
| Met Pho | e Asn | Pro | Gln 5 | Leu | Gln | Gln | Gln | Gln 10 | Gln | Leu | Gln | Gln | Gln 15 | Gln | |
| Gln Glı | ı Leu | Gln 20 | Gln | Gln | Leu | Gln | Gln 25 | Gln | Gln | Leu | Gln | Gln 30 | Gln | Gln | |
| Gln Glı | n Ile 35 | Leu | Gln | Leu | Gln | Gln 40 | Leu | Leu | Gln | Gln | Ser 45 | Pro | Pro | Gln | |
| Ala Ser 50 | r Leu | Ser | Ile | Pro | Val 55 | Ser | Arg | Gly | Leu | Pro 60 | Gln | Gln | Ser | Ser | |
| Pro Gli 65 | n Gln | Leu | Leu | Ser 70 | Leu | Gln | Gly | Leu | His 75 | Ser | Thr | Ser | Leu | Leu 80 | |
| Asn Gl | y Pro | Met | Leu 85 | Gln | Arg | Ala | Leu | Leu 90 | Leu | Gln | Gln | Leu | Gln 95 | Gly | |

| Leu | Asp | Gln | Phe 100 | Ala | Met | Pro | Pro | Ala 105 | Thr | Tyr | Asp | Gly | Ala 110 | Ser | Leu |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Thr | Met | Pro 115 | Thr | Ala | Thr | Leu | Gly 120 | Asn | Leu | Arg | Ala | Phe 125 | Asn | Val | Thr |
| Ala | Pro 130 | Ser | Leu | Ala | Ala | Pro 135 | Ser | Leu | Thr | Pro | Pro 140 | Gln | Met | Val | Thr |
| Pro 145 | Asn | Leu | Gln | Gln | Phe 150 | Phe | Pro | Gln | Ala | Thr 155 | Arg | Gln | Ser | Leu | Leu 160 |
| Gly | Pro | Pro | Pro | Val 165 | Gly | Val | Pro | Ile | Asn 170 | Pro | Ser | Gln | Leu | Asn 175 | His |
| Ser | Gly | Arg | Asn 180 | Thr | Gln | Lys | Gln | Ala 185 | Arg | Thr | Pro | Ser | Ser 190 | Thr | Thr |
| Pro | Asn | Arg 195 | Lys | Asp | Ser | Ser | Ser 200 | Gln | Thr | Val | Pro | Leu 205 | Glu | Asp | Arg |
| Glu | Asp 210 | Pro | Thr | Glu | Gly | Ser 215 | Glu | Glu | Ala | Thr | Glu 220 | Leu | Gln | Met | Asp |
| Thr 225 | Cys | Glu | Asp | Gln | Asp 230 | Ser | Leu | Val | Gly | Pro 235 | Asp | Ser | Met | Leu | Ser 240 |
| Glu | Pro | Gln | Val | Pro 245 | Glu | Pro | Glu | Pro | Phe 250 | Glu | Thr | Leu | Glu | Pro 255 | Pro |
| Ala | Lys | Arg | Cys 260 | Arg | Ser | Ser | Glu | Glu 265 | Ser | Thr | Glu | Lys | Gly 270 | Pro | Thr |
| Gly | Gln | Pro 275 | Gln | Ala | Arg | Val | Gln 280 | Pro | Gln | Thr | Gln | Met 285 | Thr | Ala | Pro |
| Lys | Gln 290 | Thr | Gln | Thr | Pro | Asp 295 | Arg | Leu | Pro | Glu | Pro 300 | Pro | Glu | Val | Gln |
| Met 305 | Leu | Pro | Arg | Ile | Gln 310 | Pro | Gln | Ala | Leu | Gln 315 | Ile | Gln | Thr | Gln | Pro 320 |

| Lys Leu Leu | Arg Gln 325 | Ala Gln | Thr | Gln | Thr 330 | Ser | Pro | Glu | His | Leu 335 | Ala |
|--------------------|----------------|----------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Pro Gln Gln | Asp Gln 340 | Val Glu | Pro | Gln 345 | Val | Pro | Ser | Gln | Pro 350 | Pro | Trp |
| Gln Leu Gln 355 | Pro Arg | Glu Thr | 360 | Pro | Pro | Asn | Gln | Ala 365 | Gln | Ala | Gln |
| Thr Gln Pro 370 | Gln Pro | Leu Trp 375 | | Ala | Gln | Ser | Gln 380 | Lys | Gln | Ala | Gln |
| Thr Gln Ala 385 | His Pro | Gln Val 390 | Pro | Thr | Gln | Ala 395 | Gln | Ser | Gln | Glu | Gln 400 |
| Thr Ser Glu | Lys Thr 405 | Gln Asp | Gln | Pro | Gln 410 | Thr | Trp | Pro | Gln | Gly 415 | Ser |
| Val Pro Pro | Pro Glu 420 | Gln Ala | Ser | Gly 425 | Pro | Ala | Cys | Ala | Thr 430 | Glu | Pro |
| Gln Leu Ser 435 | Ser His | Ala Ala | Glu 440 | Ala | Gly | Ser | Asp | Pro 445 | Asp | Lys | Ala |
| Leu Pro Glu 450 | Pro Val | Ser Ala 455 | | Ser | Ser | Glu | Asp 460 | Arg | Ser | Arg | Glu |
| Ala Ser Ala 465 | Gly Gly | Leu Asp 470 | Leu | Gly | Glu | Cys 475 | Glu | Lys | Arg | Ala | Gly 480 |
| Glu Met Leu | Gly Met 485 | Trp Gly | Ala | Gly | Ser 490 | Ser | Leu | Lys | Val | Thr 495 | Ile |
| Leu Gln Ser | Ser Asn 500 | Ser Arg | Ala | Phe 505 | Asn | Thr | Thr | Pro | Leu 510 | Thr | Ser |
| Gly Pro Arg 515 | Pro Gly | Asp Ser | Thr 520 | Ser | Ala | Thr | Pro | Ala 525 | Ile | Ala | Ser |
| Thr Pro Ser 530 | Lys Gln | Ser Leu 535 | | Phe | Phe | Cys | Tyr 540 | Ile | Cys | Lys | Ala |
| Ser Ser Ser | Ser Gln | Gln Glu | Phe | Gln | Asp | His | Met | Ser | Glu | Ala | Gln |

His Gln Gln Arg Leu Gly Glu Ile Gln His Ser Ser Gln Thr Cys Leu 565 570 575

Leu Ser Leu Leu Pro Met Pro Arg Asp Ile Leu Glu Lys Glu Ala Glu
580 585 590

Asp Pro Pro Pro Lys Arg Trp Cys Asn Thr Cys Gln Val Tyr Tyr Val 595 600 605

Gly Asp Leu Ile Gln His Arg Arg Thr Gln Glu His Lys Val Ala Lys 610 620

Gln Ser Leu Arg Pro Phe Cys Thr Ile Cys Asn Arg Tyr Phe Lys Thr 625 630 635 640

Pro Arg Lys Phe Val Glu His Val Lys Ser Gln Gly His Lys Asp Lys 645 650 655

Ala Gln Glu Leu Lys Thr Leu Glu Lys Glu Thr Gly Ser Pro Asp Glu 660 665 670

Asp His Phe Ile Thr Val Asp Ala Val Gly Cys Phe Glu Ser Gly Gln 675 680 685

Glu Glu Asp Glu Asp Asp Asp Glu Glu Glu Glu Glu Glu Glu Glu Ile 690 695 700

Glu Ala Glu Glu Glu Phe Cys Lys Gln Val Lys Pro Arg Glu Thr Ser 705 710 715 720

Ser Glu Gln Gly Lys Gly Ser Glu Thr Tyr Asn Pro Asn Thr Ala Tyr 725 730 735

Gly Glu Asp Phe Leu Val Pro Val Met Gly Tyr Val Cys Gln Ile Cys 740 745 750

His Lys Phe Tyr Asp Ser Asn Ser Glu Leu Arg Leu Ser His Cys Lys
755 760 765

Ser Leu Ala His Phe Glu Asn Leu Gln Lys Tyr Lys Ala Lys Asn Pro 770 775 780

Ser Pro Pro Pro Thr Arg Pro Val Ser Arg Lys Cys Ala Ile Asn Ala 790 795 785 Arg Asn Ala Leu Thr Ala Leu Phe Thr Ser Ser His Gln Pro Ser Pro 805 Gln Asp Thr Val Lys Met Pro Ser Lys Val Lys Pro Gly Ser Pro Gly 825 820 Leu Pro Pro Pro Leu Arg Arg Ser Thr Arg Leu Lys Thr 840 835 <210> 27 <211> 716 <212> PRT <213> Mouse <400> 27 Ser Thr Ser Leu Leu Asn Gly Pro Met Leu Gln Arg Ala Leu Leu Leu Gln Gln Leu Gln Gly Leu Asp Gln Phe Ala Met Pro Pro Ala Thr Tyr 20 25 Asp Gly Ala Ser Leu Thr Met Pro Thr Ala Thr Leu Gly Asn Leu Arg 45 35 40 Ala Phe Asn Val Thr Ala Pro Ser Leu Ala Ala Pro Ser Leu Thr Pro 50 55 60 Pro Gln Met Val Thr Pro Asn Leu Gln Gln Phe Phe Pro Gln Ala Thr 65 Arg Gln Ser Leu Leu Gly Pro Pro Pro Val Gly Val Pro Ile Asn Pro 90 Ser Gln Leu Asn His Ser Gly Arg Asn Thr Gln Lys Gln Ala Arg Thr 105 100

125

Pro Ser Ser Thr Thr Pro Asn Arg Lys Thr Val Pro Leu Glu Asp Arg 120

| Glu | Asp 130 | Pro | Thr | Glu | Gly | Ser 135 | Glu | Glu | Ala | Thr | Glu 140 | Leu | Gln | Met | Asp |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Thr 145 | Cys | Glu | Asp | Gln | Asp 150 | Ser | Leu | Val | Gly | Pro 155 | Asp | Ser | Met | Leu | Ser 160 |
| Glu | Pro | Gln | Val | Pro 165 | Glu | Pro | Glu | Pro | Phe 170 | Glu | Thr | Leu | Glu | Pro 175 | Pro |
| Ala | Lys | Arg | Cys 180 | Arg | Ser | Ser | Glu | Glu 185 | Ser | Thr | Glu | Lys | Gly 190 | Pro | Thr |
| Gly | Gln | Pro 195 | Gln | Ala | Arg | Val | Gln 200 | Pro | Gln | Thr | Gln | Met 205 | Thr | Ala | Pro |
| Lys | Gln 210 | Thr | Gln | Thr | Pro | Asp 215 | Arg | Leu | Pro | Glu | Pro 220 | Pro | Glu | Val | Gln |
| Met 225 | Leu | Pro | Arg | Ile | Gln 230 | Pro | Gln | Ala | Leu | Gln 235 | Ile | Gln | Thr | Gln | Pro 240 |
| Lys | Leu | Leu | Arg | Gln 245 | Ala | Gln | Thr | Gln | Thr 250 | Ser | Pro | Glu | His | Leu 255 | Ala |
| Pro | Gln | Gln | Asp 260 | Gln | Val | Pro | Thr | Gln 265 | Ala | Gln | Ser | Gln | Glu 270 | Gln | Thr |
| Ser | Glu | Lys 275 | Thr | Gln | Asp | Gln | Pro 280 | Gln | Thr | Trp | Pro | Gln 285 | Gly | Ser | Val , |
| Pro | Pro 290 | Pro | Glu | Gln | Ala | Ser 295 | Gly | Pro | Ala | Cys | Ala 300 | Thr | Glu | Pro | Gln |
| Leu 305 | Ser | Ser | His | Ala | Ala 310 | Glu | Ala | Gly | Ser | Asp 315 | Pro | Asp | Lys | Ala | Leu 320 |
| Pro | Glu | Pro | Val | Ser 325 | Ala | Gln | Ser | Ser | Glu 330 | Asp | Arg | Ser | Arg | Glu 335 | Ala |
| Ser | Ala | Gly | Gly 340 | Leu | Asp | Leu | Gly | Glu 345 | Cys | Glu | Lys | Arg | Ala 350 | Gly | Glu |
| Met | Leu | Gly | Met | Trp | Gly | Ala | Gly | Ser | Ser | Leu | Lys | Val | Thr | Ile | Leu |

355 360 365

| Gln | Ser 370 | Ser | Asn | Ser | Arg | Ala 375 | Phe | Asn | Thr | Thr | Pro 380 | Leu | Thr | Ser | Gly |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|--------------------|------------|
| Pro 385 | Arg | Pro | Gly | Asp | Ser 390 | Thr | Ser | Ala | Thr | Pro 395 | Ala | Ile | Ala | Ser | Th: |
| Pro | Ser | Lys | Gln | Ser 405 | Leu | Gln | Phe | Phe | Cys 410 | Tyr | Ile | Cys | Lys | Ala 415 | Sei |
| Ser | Ser | Ser | Gln 420 | Gln | Glu | Phe | Gln | Asp 425 | His | Met | Ser | Glu | Ala 430 | Gln | His |
| Gln | Gln | Arg 435 | Leu | Gly | Glu | Ile | Gln 440 | His | Ser | Ser | Gln | Thr 445 | Cys | Leu | Let |
| Ser | Leu 450 | Leu | Pro | Met | Pro | Arg 455 | Asp | Ile | Leu | Glu | Lys 460 | Glu | Ala | Glu | Asp |
| Pro 465 | Pro | Pro | Lys | Arg | Trp 470 | Cys | Asn | Thr | Cys | Gln 475 | Val | Tyr | Tyr | Val | Gly 480 |
| Asp | Leu | Ile | Gln | His 485 | Arg | Arg | Thr | Gln | Glu 490 | His | Lys | Val | Ala | Lys 495 | Glr |
| Ser | Leu | Arg | Pro 500 | Phe | Cys | Thr | Ile | Cys 505 | Asn | Arg | Tyr | Phe | Lys 510 | Thr | Pro |
| Arg | Lys | Phe 515 | Val | Glu | His | Val | Lys 520 | Ser | Gln | Gly | His | Lys 525 | Asp | Lys | Ala |
| Gln | Glu 530 | Leu | Lys | Thr | Leu | Glu 535 | Lys | Glu | Thr | Gly | Ser 540 | Pro | Asp | Glu | Asp |
| His 545 | Phe | Ile | Thr | Val | Asp 550 | Ala | Val | Gly | Cys | Phe 555 | Glu | Ser | Gly | Gln | Glu 560 |
| Glu | Asp | Glu | Asp | Asp 565 | Asp | Glu | Glu | Glu | Glu 570 | Glu | Glu | Gly | Glu | Il <u>e</u> 575 | Glu |
| Ala | Glu | Glu | Glu 580 | Phe | Cys | Lys | Gln | Val 585 | Lys | Pro | Arg | Glu | Thr 590 | Ser | Sei |

Glu Gln Gly Lys Gly Ser Glu Thr Tyr Asn Pro Asn Thr Ala Tyr Gly 595 600 605

Glu Asp Phe Leu Val Pro Val Met Gly Tyr Val Cys Gln Ile Cys His 610 615 620

Lys Phe Tyr Asp Ser Asn Ser Glu Leu Arg Leu Ser His Cys Lys Ser 625 630 635 640

Leu Ala His Phe Glu Asn Leu Gln Lys Tyr Lys Ala Lys Asn Pro Ser 645 650 655

Pro Pro Pro Thr Arg Pro Val Ser Arg Lys Cys Ala Ile Asn Ala Arg 660 665 670

Asn Ala Leu Thr Ala Leu Phe Thr Ser Ser His Gln Pro Ser Pro Gln 675 680 685

Asp Thr Val Lys Met Pro Ser Lys Val Lys Pro Gly Ser Pro Gly Leu 690 695 700

Pro Pro Pro Leu Arg Arg Ser Thr Arg Leu Lys Thr 705 710 715

<210> 28

<211> 714

<212> PRT

<213> Mouse

<400> 28

Met Phe Asn Pro Gln Leu Gln Gln Gln Gln Gln Leu Gln Gln Gln Gln 15

Gln Gln Ile Leu Gln Leu Gln Gln Leu Leu Gln Gln Ser Pro Pro Gln 35 40 45

Ala Ser Leu Ser Ile Pro Val Ser Arg Gly Leu Pro Gln Gln Ser Ser 50 55 60

| Pro 65 | Gln | Gln | Leu | Leu | Ser 70 | Leu | Gln | Gly | Leu | His 75 | Ser | Thr | Ser | Leu | Leu 80 |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Asn | Gly | Pro | Met | Leu 85 | Gln | Arg | Ala | Leu | Leu 90 | Leu | Gln | Gln | Leu | Gln 95 | Gly |
| Leu | Asp | Gln | Phe 100 | Ala | Met | Pro | Pro | Ala 105 | Thr | Tyr | Asp | Gly | Ala 110 | Ser | Leu |
| Thr | Met | Pro 115 | Thr | Ala | Thr | Leu | Gly 120 | Asn | Leu | Arg | Ala | Phe 125 | Asn | Val | Thr |
| Ala | Pro 130 | Ser | Leu | Ala | Ala | Pro 135 | Ser | Leu | Thr | Pro | Pro 140 | Gln | Met | Val | Thr |
| Pro 145 | Asn | Leu | Gln | Gln | Phe 150 | Phe | Pro | Gln | Ala | Thr 155 | Arg | Gln | Ser | Leu | Leu 160 |
| Gly | Pro | Pro | Pro | Val 165 | Gly | Val | Pro | Ile | Asn 170 | Pro | Ser | Gln | Leu | Asn 175 | His |
| Ser | Gly | Arg | Asn 180 | Thr | Gln | Lys | Gln | Ala 185 | Arg | Thr | Pro | Ser | Ser 190 | Thr | Thr |
| Pro | Asn | Arg 195 | Lys | Thr | Val | Pro | Leu 200 | Glu | Asp | Arg | Glu | Asp 205 | Pro | Thr | Glu |
| Gly | Ser 210 | Glu | Glu | Ala | Thr | Glu 215 | Leu | Gln | Met | Asp | Thr 220 | Cys | Glu | Asp | Gln |
| Asp 225 | Ser | Leu | Val | Gly | Pro 230 | Asp | Ser | Met | Leu | Ser 235 | Glu | Pro | Gln | Val | Pro 240 |
| Glu | Pro | Glu | Pro | Phe 245 | Glu | Thr | Leu | Glu | Pro 250 | Pro | Ala | Lys | Arg | Cys 255 | Arg |
| Ser | Ser | Glu | Glu 260 | Ser | Thr | Glu | Lys | Gly 265 | Pro | Thr | Gly | Gln | Pro 270 | Gln | Ala |
| Arg | Val | Gln 275 | Pro | Gln | Thr | Gln | Met 280 | Thr | Ala | Pro | Lys | Gln 285 | Thr | Gln | Thr |
| Pro | Asp | Arg | Leu | Pro | Glu | Pro | Pro | Glu | Val | Gln | Met | Leu | Pro | Arg | Ile |

Gln Pro Gln Ala Leu Gln Ile Gln Thr Gln Pro Lys Leu Leu Arg Gln

300

Gln Pro Gln Ala Leu Gln Ile Gln Thr Gln Pro Lys Leu Leu Arg Gln 305 310 315 320

295

- Ala Gln Thr Gln Thr Ser Pro Glu His Leu Ala Pro Gln Gln Asp Gln 325 330 335
- Val Pro Thr Gln Ala Gln Ser Gln Glu Gln Thr Ser Glu Lys Thr Gln 340 345 350
- Asp Gln Pro Gln Thr Trp Pro Gln Gly Ser Val Pro Pro Pro Glu Gln 355 360 365
- Ala Ser Gly Pro Ala Cys Ala Thr Glu Pro Gln Leu Ser Ser His Ala 370 375 380
- Ala Glu Ala Gly Ser Asp Pro Asp Lys Ala Leu Pro Glu Pro Val Ser 385 390 395 400
- Ala Gln Ser Ser Glu Asp Arg Ser Arg Glu Ala Ser Ala Gly Gly Leu 405 410 415
- Asp Leu Gly Glu Cys Glu Lys Arg Ala Gly Glu Met Leu Gly Met Trp
 420 425 430
- Gly Ala Gly Ser Ser Leu Lys Val Thr Ile Leu Gln Ser Ser Asn Ser 435 440 445
- Arg Ala Phe Asn Thr Thr Pro Leu Thr Ser Gly Pro Ser Pro Gly Asp 450 455 460
- Ser Thr Ser Ala Thr Pro Ala Ile Ala Ser Thr Pro Ser Lys Gln Ser 465 470 475 480
- Leu Gln Phe Phe Cys Tyr Ile Cys Lys Ala Ser Ser Ser Ser Gln Gln 485 490 495
- Glu Phe Gln Asp His Met Ser Glu Ala Gln His Gln Gln Arg Leu Gly 500 505 510
- Glu Ile Gln His Ser Ser Gln Thr Cys Leu Leu Ser Leu Leu Pro Met 515 520 525

Pro Arg Asp Ile Leu Glu Lys Glu Ala Glu Asp Pro Pro Pro Lys Arg 530 535 540

Trp Cys Asn Thr Cys Gln Val Tyr Tyr Val Gly Asp Leu Ile Gln His 545 550 555 560

Arg Arg Thr Glu His Lys Val Ala Lys Glu Ser Leu Arg Pro Phe 565 570 575

Cys Thr Ile Cys Asn Arg Tyr Phe Lys Thr Pro Arg Lys Phe Val Glu 580 585 590

His Val Lys Ser Gln Gly His Lys Asp Lys Ala Gln Glu Leu Lys Thr 595 600 605

Leu Glu Lys Glu Thr Gly Ser Pro Asp Glu Asp His Phe Ile Thr Val 610 620

Glu Ala Val Gly Cys Phe Glu Ser Gly Gln Glu Glu Asp Glu Asp 625 635 640

Asp Glu Glu Glu Glu Glu Glu Glu Ile Glu Ala Glu Glu Glu Phe
645 650 655

Cys Lys Gln Val Lys Pro Arg Glu Thr Ser Ser Glu Gln Gly Lys Gly 660 665 670

Ser Glu Thr Tyr Asn Pro Asn Thr Ala Tyr Gly Glu Asp Phe Leu Val 675 680 685

Pro Val Met Gly Tyr Val Cys Gln Ile Cys His Lys Phe Tyr Asp Ser 690 695 700

Asn Ser Glu Leu Arg Leu Ser His Cys Lys 705 710

<210> 29

<211> 898

<212> PRT

<213> Homo sapiens

<400> 29

| Met 1 | Phe | Ser | Gln | Gln 5 | Gln | Gln | Gln | Gln | Leu 10 | Gln | Gln | Gln | Gln | Gln 15 | Gln |
|---------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Leu | Gln | Gln | Leu 20 | Gln | Gln | Gln | Gln | Leu 25 | Gln | Gln | Gln | Gln | Leu 30 | Gln | Gln |
| Gln | Gln | Leu 35 | Leu | Gln | Leu | Gln | Gln 40 | Leu | Leu | Gln | Gln | Ser 45 | Pro | Pro | Gln |
| Ala | Pro 50 | Leu | Pro | Met | Ala | Val 55 | Ser | Arg | Gly | Leu | Pro 60 | Pro | Gln | Gln | Pro |
| Gln 65 | Gln | Pro | Leu | Leu | Asn 70 | Leu | Gln | Gly | Thr | Asn 75 | Ser | Ala | Ser | Leu | Leu 80 |
| Asn | Gly | Ser | Met | Leu 85 | Gln | Arg | Ala | Leu | Leu 90 | Leu | Gln | Gln | Leu | Gln 95 | Gly |
| Leu | Asp | Gln | Phe 100 | Ala | Met | Pro | Pro | Ala 105 | Thr | Tyr | Asp | Thr | Ala 110 | Gly | Leu |
| Thr | Met | Pro 115 | Thr | Ala | Thr | Leu | Gly 120 | Asn | Leu | Arg | Gly | Tyr 125 | Gly | Met | Ala |
| Ser | Pro 130 | Gly | Leu | Ala | Ala | Pro 135 | Ser | Leu | Thr | Pro | Pro 140 | Gln | Leu | Ala | Thr |
| Pro 145 | Asn | Leu | Gln | Gln | Phe 150 | Phe | Pro | Gln | Ala | Thr 155 | Arg | Gln | Ser | Leu | Leu 160 |
| Gly | Pro | Pro | Pro | Val 165 | Gly | Vál | Pro | Met | Asn 170 | Pro | Ser | Gln | Phe | Asn 175 | Leu |
| Ser | Gly | Arg | Asn 180 | Pro | Gln | Lys | Gln | Ala 185 | Arg | Thr | Ser | Ser | Ser 190 | Thr | Thr |
| Pro | Asn | Arg 195 | Lys | Asp | Ser | Ser | Ser 200 | Gln | Thr | Met | Pro | Val 205 | Glu | Asp | Lys |
| Ser | Asp 210 | Pro | Pro | Glu | Gly | Ser 215 | Glu | Glu | Ala | Ala | Glu 220 | Pro | Arg | Met | Asp |
| Thr | Pro | Glu | Asp | Gln | Asp | Leu | Pro | Pro | Cys | Pro | Glu | Asp | Ile | Ala | Lys |

| Glu Lys | Arg | Thr | Pro | Ala | Pro | Glu | Pro | Glu | Pro | Cys | Glu | Ala | Ser | Glu |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 245 | | | | | | | | 250 | | | | | 255 | |

- Leu Pro Ala Lys Arg Leu Arg Ser Ser Glu Glu Pro Thr Glu Lys Glu 260 265 270
- Pro Pro Gly Gln Leu Gln Val Lys Ala Gln Pro Gln Ala Arg Met Thr 275 280 285
- Val Pro Lys Gln Thr Gln Thr Pro Asp Leu Leu Pro Glu Ala Leu Glu 290 295 300
 - Ala Gln Val Leu Pro Arg Phe Gln Pro Arg Val Leu Gln Val Gln Ala 305 310 315 320
 - Gln Val Gln Ser Gln Thr Gln Pro Arg Ile Pro Ser Thr Asp Thr Gln 325 330 335
 - Val Gln Pro Lys Leu Gln Lys Gln Ala Gln Thr Gln Thr Ser Pro Glu 340 345 350
 - His Leu Val Leu Gln Gln Lys Gln Val Gln Pro Gln Leu Gln Gln Glu 355 360 365
 - Ala Glu Pro Gln Lys Gln Val Gln Pro Gln Val Gln Pro Gln Ala His 370 375 380
 - Ser Gln Gly Pro Arg Gln Val Gln Leu Gln Gln Glu Ala Glu Pro Leu 385 390 395 400
 - Lys Gln Val Gln Pro Gln Val Gln Pro Gln Ala His Ser Gln Pro Pro 405 410 415
 - Arg Gln Val Gln Leu Gln Leu Gln Lys Gln Val Gln Thr Gln Thr Tyr 420 425 430
 - Pro Gln Val His Thr Gln Ala Gln Pro Ser Val Gln Pro Gln Glu His
 435 440 445
 - Pro Pro Ala Gln Val Ser Val Gln Pro Pro Glu Gln Thr His Glu Gln 450 455 460

| Pro 465 | His | Thr | Gln | Pro | Gln 470 | Val | Ser | Leu | Leu | Ala 475 | Pro | Glu | Gln | Thr | Pro 480 |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Val | Val | Val | His | Val 485 | Cys | Gly | Leu | Glu | Met 490 | Pro | Pro | Asp | Ala | Val 495 | Glu |
| Ala | Gly | Gly | Gly 500 | Met | Glu | Lys | Thr | Leu 505 | Pro | Glu | Pro | Val | Gly 510 | Thr | Gln |
| Val | Ser | Met 515 | Glu | Glu | Ile | Gln | Asn 520 | Glu | Ser | Ala | Cys | Gly 525 | Leu | Asp | Val |
| Gly | Glu 530 | Cys | Glu | Asn | Arg | Ala 535 | Arg | Glu | Met | Pro | Gly 540 | Val | Trp | Gly | Ala |
| Gly 545 | Gly | Ser | Leu | Lys | Val 550 | Thr | Ile | Leu | Gln | Ser 555 | Ser | Asp | Ser | Arg | Ala 560 |
| Phe | Ser | Thr | Val | Pro 565 | Leu | Thr | Pro | Val | Pro 570 | Arg | Pro | Ser | Asp | Ser 575 | Val |
| Ser | Ser | Thr | Pro 580 | Ala | Ala | Thr | Ser | Thr 585 | Pro | Ser | Lys | Gln | Ala 590 | Leu | Gln |
| Phe | Phe | Cys 595 | Tyr | Ile | Cys | Lys | Ala 600 | Ser | Cys | Ser | Ser | Gln 605 | Gln | Glu | Phe |
| Gln | Asp 610 | His | Met | Ser | Glu | Pro 615 | Gln | His | Gln | Gln | Arg 620 | Leu | Gly | Glu | Ile |
| Gln 625 | His | Met | Ser | Gln | Ala 630 | Cys | Leu | Leu | Ser | Leu 635 | Leu | Pro | Val | Pro | Arg 640 |
| Asp | Val | Leu | Glu | Thr 645 | Glu | Asp | Glu | Glu | Pro 650 | Pro | Pro | Arg | Arg | Trp 655 | Cys |
| Asn | Thr | Cys | Gln 660 | Leu | Tyr | Tyr | Met | Gly 665 | Asp | Leu | Ile | Gln | His 670 | Arg | Arg |
| Thr | Gln | Asp 675 | His | Lys | Ile | Ala | Lys 680 | Gln | Ser | Leu | Arg | Pro 685 | Phe | Cys | Thr |

Val Cys Asn Arg Tyr Phe Lys Thr Pro Arg Lys Phe Val Glu His Val Lys Ser Gln Gly His Lys Asp Lys Ala Lys Glu Leu Lys Ser Leu Glu Lys Glu Ile Ala Gly Gln Asp Glu Asp His Phe Ile Thr Val Asp Ala Val Gly Cys Phe Glu Gly Asp Glu Glu Glu Glu Asp Asp Glu Asp Glu Glu Glu Ile Glu Val Glu Glu Leu Cys Lys Gln Val Arg Ser Arg Asp Ile Ser Arg Glu Glu Trp Lys Gly Ser Glu Thr Tyr Ser Pro Asn Thr Ala Tyr Gly Val Asp Phe Leu Val Pro Val Met Gly Tyr Ile Cys Arg Ile Cys His Lys Phe Tyr His Ser Asn Ser Gly Ala Gln Leu Ser His Cys Lys Ser Leu Gly His Phe Glu Asn Leu Gln Lys Tyr Lys Ala Ala Lys Asn Pro Ser Pro Thr Thr Arg Pro Val Ser Arg Arg Cys Ala Ile Asn Ala Arq Asn Ala Leu Thr Ala Leu Phe Thr Ser Ser Gly Arg Pro Pro Ser Gln Pro Asn Thr Gln Asp Lys Thr Pro Ser Lys Val Thr Ala Arg Pro Ser Gln Pro Pro Leu Pro Arg Arg Ser Thr Arg Leu

Lys Thr

<210> 30 <211> 898 <212> PRT <213> Homo sapiens <400> 30 Met Phe Ser Gln Gln Gln Gln Gln Leu Gln Gln Gln Gln Gln Gln Leu Gln Gln Leu Gln Gln Gln Leu Gln Gln Gln Leu Gln Gln Gln Leu Gln Gln 25 20 Gln Gln Leu Gln Leu Gln Gln Leu Gln Gln Ser Pro Pro Gln 35 40 Ala Pro Leu Pro Met Ala Val Ser Arg Gly Leu Pro Pro Gln Gln Pro Gln Gln Pro Leu Leu Asn Leu Gln Gly Thr Asn Ser Ala Ser Leu Leu Asn Gly Ser Met Leu Gln Arg Ala Leu Leu Gln Gln Leu Gln Gly 85 Leu Asp Gln Phe Ala Met Pro Pro Ala Thr Tyr Asp Thr Ala Gly Leu 100 105 Thr Met Pro Thr Ala Thr Leu Gly Asn Leu Arg Gly Tyr Gly Met Ala 120 115 Ser Pro Gly Leu Ala Ala Pro Ser Leu Thr Pro Pro Gln Leu Ala Thr 130 140 135 Pro Asn Leu Gln Gln Phe Pro Gln Ala Thr Arg Gln Ser Leu Leu 160 145 150 Gly Pro Pro Pro Val Gly Val Pro Met Asn Pro Ser Gln Phe Asn Leu Ser Gly Arg Asn Pro Gln Lys Gln Ala Arg Thr Ser Ser Ser Thr Thr

205

185

Pro Asn Arg Lys Asp Ser Ser Ser Gln Thr Met Pro Val Glu Asp Lys 200

180

| Ser Asp Pro 210 | Pro Glu | Gly Ser 215 | Glu G | Glu Ala | Ala Glu 220 | | Arg | Met | Asp |
|--------------------|----------------|----------------|--------------|----------------|----------------|------------|------------|------------|------------|
| Thr Pro Glu 225 | Asp Gln | Asp Leu 230 | Leu F | Pro Cys | Pro Glu 235 | Asp | Ile | Ala | Lys 240 |
| Glu Lys Arg | Thr Pro 245 | Ala Pro | Glu F | Pro Glu 250 | Pro Cys | Glu | Ala | Ser 255 | Glu |
| Leu Pro Ala | Lys Arg 260 | Leu Arg | | Ser Glu 265 | Glu Pro | Thr | Glu 270 | Lys | Glu |
| Pro Pro Gly 275 | Gln Leu | Gln Val | Lys A 280 | Ala Gln | Pro Gln | Ala 285 | Arg | Met | Thr |
| Val Pro Lys 290 | Gln Thr | Gln Thr 295 | Pro A | Asp Leu | Leu Pro 300 | | Ala | Leu | Glu |
| Ala Gln Val 305 | Leu Pro | Arg Phe 310 | Gln F | Pro Arg | Val Leu 315 | Gln | Val | Gln | Ala 320 |
| Gln Val Gln | Ser Gln 325 | Thr Gln | Pro A | Arg Ile 330 | Pro Ser | Thr | Asp | Thr 335 | Gln |
| Val Gln Pro | Lys Leu 340 | Gln Lys | | Ala Gln 345 | Thr Gln | Thr | Ser 350 | Pro | Glu |
| His Leu Val 355 | Leu Gln | Gln Lys | Gln V 360 | /al Gln | Pro Gln | Leu 365 | Gln | Gln | Glu |
| Ala Glu Pro 370 | Gln Lys | Gln Val 375 | Gln F | Pro Gln | Val Gln 380 | Pro | Gln | Ala | His |
| Ser Gln Gly 385 | Pro Arg | Gln Val 390 | Gln I | Leu Gln | Gln Glu 395 | Ala | Glu | Pro | Leu 400 |
| Lys Gln Val | Gln Pro 405 | Gln Val | Gln F | Pro Gln 410 | Ala His | Ser | Gln | Pro 415 | Pro |
| Arg Gln Val | Gln Leu 420 | Gln Leu | | Lys Gln 125 | Val Gln | Thr | Gln 430 | Thr | Tyr |

| Pro | Gln | Val 435 | His | Thr | Gln | Ala | Gln 440 | Pro | Ser | Val | Gln | Pro 445 | Gln | Glu | His |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Pro | Pro 450 | Ala | Gln | Val | Ser | Val 455 | Gln | Pro | Pro | Glu | Gln 460 | Thr | His | Glu | Gln |
| Pro 465 | His | Thr | Gln | Pro | Gln 470 | Val | Ser | Leu | Leu | Ala 475 | Pro | Glu | Gln | Thr | Pro 480 |
| Val | Val | Val | His | Val 485 | Cys | Gly | Leu | Glu | Met 490 | Pro | Pro | Asp | Ala | Val 495 | Glu |
| Ala | Gly | Gly | Gly 500 | Met | Glu | Lys | Thr | Leu 505 | Pro | Glu | Pro | Val | Gly 510 | Thr | Gln |
| Val | Ser | Met 515 | Glu | Glu | Ile | Gln | Asn 520 | Glu | Ser | Ala | Cys | Gly 525 | Leu | Asp | Val |
| Gly | Glu 530 | Cys | Glu | Asn | Arg | Ala 535 | Arg | Glu | Met | Pro | Gly 540 | Val | Trp | Gly | Ala |
| Gly 545 | Gly | Ser | Leu | Lys | Val 550 | Thr | Ile | Leu | Gln | Gly 555 | Ser | Asp | Ser | Arg | Ala 560 |
| Phe | Ser | Thr | Val | Pro 565 | Leu | Thr | Pro | Val | Pro 570 | Arg | Pro | Ser | Asp | Ser 575 | Val |
| Ser | Ser | Thr | Pro 580 | Ala | Ala | Thr | Ser | Thr 585 | Pro | Ser | Lys | Gln | Ala 590 | Leu | Gln |
| Phe | Phe | Cys 595 | Tyr | Ile | Cys | Lys | Ala 600 | Ser | Cys | Ser | Ser | Gln 605 | Gln | Glu | Phe |
| Gln | Asp 610 | His | Met | Ser | Glu | Pro 615 | Gln | His | Gln | Gln | Arg 620 | Leu | Gly | Glu | Ile |
| Gln 625 | His | Met | Ser | Gln | Ala 630 | Cys | Leu | Leu | Ser | Leu 635 | Leu | Pro | Val | Pro | Arg 640 |
| Asp | Val | Leu | Glu | Thr 645 | Glu | Asp | Glu | Glu | Pro 650 | Pro | Pro | Arg | Arg | Trp 655 | Cys |

| Asn | Thr | Cys | Gln 660 | Leu | Tyr | Tyr | Met | Gly 665 | Asp | Leu | Ile | Gln | His 670 | Arg | Arg |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Thr | Gln | Asp 675 | His | Lys | Ile | Ala | Lys 680 | Gln | Ser | Leu | Arg | Pro 685 | Phe | Cys | Thr |
| Val | Cys 690 | Asn | Arg | Tyr | Phe | Lys 695 | Thr | Pro | Arg | Lys | Phe 700 | Val | Glu | His | Val |
| Lys 705 | Ser | Gln | Gly | His | Lys 710 | Asp | Lys | Ala | Lys | Glu 715 | Leu | Lys | Ser | Leu | Glu 720 |
| Lys | Glu | Ile | Ala | Gly 725 | Gln | Asp | Glu | Asp | His 730 | Phe | Ile | Thr | Val | Asp 735 | Ala |
| Val | Gly | Cys | Phe 740 | Glu | Gly | Asp | Glu | Glu 745 | Glu | Glu | Glu | Asp | Asp 750 | Glu | Asp |
| Glu | Glu | Glu 755 | Ile | Glu | Val | Glu | Glu 760 | Glu | Leu | Cys | Lys | Gln 765 | Val | Arg | Ser |
| Arg | Asp 770 | Ile | Ser | Arg | Glu | Glu 775 | Trp | Lys | Gly | Ser | Glu 780 | Thr | Tyr | Ser | Pro |
| Asn 785 | Thr | Ala | Tyr | Gly | Val 790 | Asp | Phe | Leu | Val | Pro 795 | Val | Met | Gly | Tyr | Ile 800 |
| Cys | Arg | Ile | Cys | His 805 | Lys | Phe | Tyr | His | Ser 810 | Asn | Ser | Gly | Ala | Gln 815 | Leu |
| Ser | His | Cys | Lys 820 | Ser | Leu | Gly | His | Phe 825 | Glu | Asn | Leu | Gln | Lys 830 | Tyr | Lys |
| Ala | Ala | Lys 835 | Asn | Pro | Ser | Pro | Thr 840 | Thr | Arg | Pro | Val | Ser 845 | Arg | Arg | Cys |
| Ala | Ile 850 | Asn | Ala | Arg | Asn | Ala 855 | Leu | Thr | Ala | Leu | Phe 860 | Thr | Ser | Ser | Gly |
| Arg 865 | Pro | Pro | Ser | Gln | Pro 870 | Asn | Thr | Gln | Asp | Lys 875 | Thr | Pro | Ser | Lys | Val 880 |
| Thr | Ala | Arg | Pro | Ser | Gln | Pro | Pro | Leu | Pro | Arg | Arg | Ser | Thr | Arg | Leu |

885 890 895

Lys Thr

<210> 31

<211> 896

<212> PRT

<213> Homo sapiens

<400> 31

Phe Ser Gln Gln Gln Gln Leu Gln Gln Gln Gln Gln Gln Leu Gln 1 5 10 15

Ser Leu Gln Leu Gln Gln Leu Leu Gln Gln Ser Pro Pro Gln Ala Pro 35 40 45

Leu Pro Met Ala Val Ser Arg Gly Leu Pro Pro Gln Gln Pro Gln Gln 50 55 60

Pro Leu Leu Asn Leu Gln Gly Thr Asn Ser Ala Ser Leu Leu Asn Gly 65 70 75 80

Ser Met Leu Gln Arg Ala Leu Leu Gln Gln Leu Gln Gly Leu Asp 85 90 95

Gln Phe Ala Met Pro Pro Ala Thr Tyr Asp Thr Ala Gly Leu Thr Met 100 105 110

Pro Thr Ala Thr Leu Gly Asn Leu Arg Gly Tyr Gly Met Ala Ser Pro 115 120 125

Gly Leu Ala Ala Pro Ser Leu Thr Pro Pro Gln Leu Ala Thr Pro Asn 130 135 140

Leu Gln Gln Phe Phe Pro Gln Ala Thr Arg Gln Ser Leu Leu Gly Pro 145 150 155 160

Pro Pro Val Gly Val Pro Met Asn Pro Ser Gln Phe Asn Leu Ser Gly 165 170 175

| | Arg | Asn | Pro | Gln 180 | Lys | Gln | Ala | Arg | Thr 185 | Ser | Ser | Ser | Thr | Thr 190 | Pro | Asn |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | Arg | Lys | Asp 195 | Ser | Ser | Ser | Gln | Thr 200 | Met | Pro | Val | Glu | Asp 205 | Lys | Ser | Asp |
| | Pro | Pro 210 | Glu | Gly | Ser | Glu | Glu 215 | Ala | Ala | Glu | Pro | Arg 220 | Met | Asp | Thr | Pro |
| - | Glu 225 | Asp | Gln | Asp | Leu | Pro 230 | Pro | Cys | Pro | Glu | Asp 235 | Ile | Ala | Lys | Glu | Lys 240 |
| | Arg | Thr | Pro | Ala | Pro 245 | Glu | Pro | Glu | Pro | Cys 250 | Glu | Ala | Ser | Glu | Leu 255 | Pro |
| | Ala | Lys | Arg | Leu 260 | Arg | Ser | Ser | Glu | Glu 265 | Pro | Thr | Glu | Lys | Glu 270 | Pro | Pro |
| | Gly | Gln | Leu 275 | Gln | Val | Lys | Ala | Gln 280 | Pro | Gln | Ala | Arg | Met 285 | Thr | Val | Pro |
| | Lys | Gln 290 | Thr | Gln | Thr | Pro | Asp 295 | Leu | Leu | Pro | Glu | Ala 300 | Leu | Glu | Ala | Gln |
| | Val 305 | Leu | Pro | Arg | Phe | Gln 310 | Pro | Arg | Val | Leu | Gln 315 | Val | Gln | Ala | Gln | Val 320 |
| | Gln | Ser | Gln | Thr | Gln 325 | Pro | Arg | Ile | Pro | Ser 330 | Thr | Asp | Thr | Gln | Val 335 | Gln |
| | Pro | Lys | Leu | Gln 340 | Lys | Gln | Ala | Gln | Thr 345 | Gln | Thr | Ser | Pro | Glu 350 | His | Leu |
| | Val | Leu | Gln 355 | Gln | Lys | Gln | Val | Gln 360 | Pro | Gln | Leu | Gln | Gln 365 | Glu | Ala | Glu |
| | Pro | Gln 370 | Lys | Gln | Val | Gln | Pro 375 | Gln | Val | Gln | Pro | Gln 380 | Ala | His | Ser | Gln |
| | Gly 385 | Pro | Arg | Gln | Val | Gln 390 | Leu | Gln | Gln | Glu | Ala 395 | Glu | Pro | Leu | Lys | Gln 400 |

| Val | Gln | Pro | Gln | Val 405 | Gln | Pro | Gln | Ala | His 410 | Ser | Gln | Pro | Pro | Arg 415 | Gln |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Val | Gln | Leu | Gln 420 | Leu | Gln | Lys | Gln | Val 425 | Gln | Thr | Gln | Thr | Tyr 430 | Pro | Gln |
| Val | His | Thr 435 | Gln | Ala | Gln | Pro | Ser 440 | Val | Gln | Pro | Gln | Glu 445 | His | Pro | Pro |
| Ala | Gln 450 | Val | Ser | Val | Gln | Pro 455 | Pro | Glu | Gln | Thr | His 460 | Glu | Gln | Pro | His |
| Thr 465 | Gln | Pro | Gln | Val | Ser 470 | Leu | Leu | Ala | Pro | Glu 475 | Gln | Thr | Pro | Val | Val 480 |
| Val | His | Val | Cys | Gly 485 | Leu | Glu | Met | Pro | Pro 490 | Asp | Ala | Val | Glu | Ala 495 | Gly |
| Gly | Gly | Met | Glu 500 | Lys | Thr | Leu | Pro | Glu 505 | Pro | Val | Gly | Thr | Gln 510 | Val | Ser |
| Met | Glu | Glu 515 | Ile | Gln | Asn | Glu | Ser 520 | Ala | Cys | Gly | Leu | Asp 525 | Val | Gly | Glu |
| Cys | Glu 530 | Asn | Arg | Ala | Arg | Glu 535 | Met | Pro | Gly | Val | Trp 540 | Gly | Ala | Gly | Gly |
| Ser 545 | Leu | Lys | Val | Thr | Ile 550 | Leu | Gln | Ser | Ser | Asp 555 | Ser | Arg | Ala | Phe | Ser 560 |
| Thr | Val | Pro | Leu | Thr 565 | Leu | Val | Pro | Arg | Pro 570 | Ser | Asp | Ser | Val | Ser 575 | Ser |
| Thr | Pro | Ala | Ala 580 | Thr | Ser | Thr | Pro | Ser 585 | Lys | Gln | Ala | Leu | Gln 590 | Phe | Phe |
| Cys | Tyr | Ile 595 | Cys | Lys | Ala | Ser | Cys 600 | Ser | Ser | Gln | Gln | Glu 605 | Phe | Gln | Asp |
| His | Met 610 | Ser | Glu | Pro | Gln | His 615 | Gln | Gln | Arg | Leu | Gly 620 | Glu | Ile | Gln | His |
| Met | Ser | Gln | Ala | Cys | Leu | Leu | Pro | Leu | Leu | Pro | Val | Pro | Arg | Asp | Val |

| Leu | Glu | Thr | Glu | Asp | Glu | Glu | Pro | Pro | Pro | Arg | Arg | Trp | Cys | Asn | Thr |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | | 645 | | | | | 650 | | | | | 655 | |

- Cys Gln Leu Tyr Tyr Met Gly Asp Leu Ile Gln His Arg Arg Thr Gln 660 665 670
- Asp His Lys Ile Ala Lys Gln Ser Leu Arg Pro Phe Cys Thr Val Cys 675 680 685
- Asn Arg Tyr Phe Lys Thr Pro Arg Lys Phe Val Glu His Val Lys Ser 690 695 700
- Gln Gly His Lys Asp Lys Ala Lys Glu Leu Lys Ser Leu Glu Lys Glu 705 710 715 720
- Ile Ala Gly Gln Asp Glu Asp His Phe Ile Thr Val Gly Ala Val Gly 725 730 735
- Cys Phe Glu Gly Asp Glu Glu Glu Glu Glu Asp Asp Glu Asp Glu Glu 740 745 750
- Glu Ile Glu Val Glu Glu Glu Leu Cys Lys Gln Val Arg Ser Arg Asp 755 760 765
- Ile Ser Arg Glu Glu Trp Lys Gly Ser Glu Thr Tyr Ser Pro Asn Thr 770 775 780
- Ala Tyr Gly Val Asp Phe Leu Val Pro Val Met Gly Tyr Ile Cys Arg 785 790 795 800
- Ile Cys His Lys Phe Tyr His Ser Asn Ser Gly Ala Gln Leu Ser His 805 810 815
- Cys Lys Ser Leu Gly His Phe Glu Asn Leu Gln Lys Tyr Lys Ala Ala 820 825 830
- Lys Asn Pro Ser Pro Thr Thr Arg Pro Val Ser Arg Arg Cys Ala Ile 835 840 845
- Asn Ala Arg Asn Ala Leu Thr Ala Leu Phe Thr Ser Ser Gly Arg Pro 850 860

870 875 865 Arg Pro Ser Gln Pro Pro Leu Pro Arg Arg Ser Thr Arg Leu Lys Thr 885 890 <210> 32 <211> 842 <212> PRT <213> Homo sapiens <400> 32 Met Phe Ser Gln Gln Gln Gln Gln Leu Gln Gln Gln Gln Gln Gln Gln 1 5 Leu Gln Gln Leu Gln Gln Gln Leu Gln Gln Gln Leu Gln Gln 25 Gln Gln Leu Leu Gln Leu Gln Gln Leu Gln Gln Ser Pro Pro Gln 35 40 Ala Pro Leu Pro Met Ala Val Ser Arg Gly Leu Pro Pro Gln Gln Pro 50 55 Gln Gln Pro Leu Leu Asn Leu Gln Gly Thr Asn Ser Ala Ser Leu Leu 70 75 Asn Gly Ser Met Leu Gln Arg Ala Leu Leu Gln Gln Leu Gln Gly 85 90 Leu Asp Gln Phe Val Met Pro Pro Ala Thr Tyr Asp Thr Ala Gly Leu 100 Thr Met Pro Thr Ala Thr Leu Gly Asn Leu Arg Gly Tyr Gly Met Ala 115 120 Ser Pro Gly Leu Ala Ala Pro Ser Leu Thr Pro Pro Gln Leu Ala Thr 135 140 Pro Asn Leu Gln Gln Phe Phe Pro Gln Ala Thr Arg Gln Ser Leu Leu

Pro Ser Gln Pro Asn Thr Gln Asp Lys Thr Pro Ser Lys Val Thr Ala

155

| Gly | Pro | Pro | Pro | Val 165 | Gly | Val | Pro | Met | Asn 170 | Pro | Ser | Gln | Phe | Asn 175 | Leu |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Ser | Gly | Arg | Asn 180 | Pro | Gln | Lys | Gln | Ala 185 | Arg | Thr | Ser | Ser | Ser 190 | Thr | Thr |
| Pro | Asn | Arg 195 | Lys | Asp | Ser | Ser | Ser 200 | Gln | Thr | Met | Pro | Val 205 | Glu | Asp | Lys |
| Ser | Asp 210 | Pro | Pro | Glu | Gly | Ser 215 | Glu | Glu | Ala | Ala | Glu 220 | Pro | Arg | Met | Asp |
| Thr 225 | Pro | Glu | Asp | Gln | Asp 230 | Leu | Pro | Pro | Cys | Pro 235 | Glu | Asp | Ile | Ala | Lys 240 |
| Glu | Lys | Arg | Thr | Pro 245 | Ala | Pro | Glu | Pro | Glu 250 | Pro | Cys | Glu | Ala | Ser 255 | Glu |
| Leu | Pro | Ala | Lys 260 | Arg | Leu | Arg | Ser | Ser 265 | Glu | Glu | Pro | Thr | Glu 270 | Lys | Glu |
| Pro | Pro | Gly 275 | Gln | Leu | Gln | Val | Lys 280 | Ala | Gln | Pro | Gln | Ala 285 | Arg | Met | Thr |
| Val | Pro 290 | Lys | Gln | Thr | Gln | Thr 295 | Pro | Asp | Leu | Leu | Pro 300 | Glu | Ala | Leu | Glu |
| Ala 305 | Gln | Val | Leu | Pro | Arg 310 | Phe | Gln | Pro | Arg | Val 315 | Leu | Gln | Val | Gln | Ala 320 |
| Gln | Val | Gln | Ser | Gln 325 | Thr | Gln | Pro | Arg | Ile 330 | Pro | Ser | Thr | Asp | Thr 335 | Gln |
| Val | Gln | Pro | Lys 340 | Leu | Gln | Lys | Gln | Ala 345 | Gln | Thr | Gln | Thr | Ser 350 | Pro | Glu |
| His | Leu | Val 355 | Leu | Gln | Gln | Lys | Gln 360 | Val | Gln | Pro | Gln | Leu 365 | Gln | Gln | Glu. |
| Ala | Glu 370 | Pro | Gln | Lys | Gln | Val 375 | Gln | Pro | Gln | Val | His 380 | Thr | Gln | Ala | Gln |
| Pro | Ser | Val | Gln | Pro | Gln | Glu | His | Pro | Pro | Ala | Gln | Val | Ser | Val | Gln |

| 385 | 390 | 395 | 400 |
|-----|-----|-----|-----|
| | | | |

Pro Pro Glu Gln Thr His Glu Gln Pro His Thr Gln Pro Gln Val Ser 405 410 415

Leu Leu Ala Pro Glu Gln Thr Pro Val Val Val His Val Cys Gly Leu
420 425 430

Glu Met Pro Pro Asp Ala Val Glu Ala Gly Gly Gly Met Glu Lys Thr
435
440
445

Leu Pro Glu Pro Val Gly Thr Gln Val Ser Met Glu Glu Ile Gln Asn 450 455 460

Glu Ser Ala Cys Gly Leu Asp Val Gly Glu Cys Glu Asn Arg Ala Arg 465 470 475 480

Glu Met Pro Gly Val Trp Gly Ala Gly Gly Ser Leu Lys Val Thr Ile 485 490 495

Leu Gln Ser Ser Asp Ser Arg Ala Phe Ser Thr Val Pro Leu Thr Pro
500 505 510

Val Pro Arg Pro Ser Asp Ser Val Ser Ser Thr Pro Ala Ala Thr Ser 515 520 525

Thr Pro Ser Lys Gln Ala Leu Gln Phe Phe Cys Tyr Ile Cys Lys Ala 530 535 540

Ser Cys Ser Ser Gln Gln Glu Phe Gln Asp His Met Ser Glu Pro Gln 545 550 555 560

His Gln Gln Arg Leu Gly Glu Ile Gln His Met Ser Gln Ala Cys Leu 565 570 575

Leu Ser Leu Leu Pro Met Pro Arg Asp Val Leu Glu Thr Glu Asp Glu 580 585 590

Glu Pro Pro Pro Arg Arg Trp Cys Asn Thr Cys Gln Leu Tyr Tyr Met 595 600 605

Gly Asp Leu Ile Gln His Arg Arg Thr Gln Asp His Lys Val Ala Lys 610 615 620

| | Gln 625 | Pro | Leu | Arg | Pro | Phe 630 | Cys | Thr | Val | Cys | Asn 635 | Arg | Tyr | Phe | Lys | Thr 640 |
|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | Pro | Arg | Lys | Phe | Val 645 | Glu | His | Val | Lys | Ser 650 | Gln | Gly | His | Lys | Asp 655 | Lys |
| | Ala | Lys | Glu | Leu 660 | Lys | Ser | Leu | Glu | Lys 665 | Glu | Ile | Ala | Gly | Gln 670 | Asp | Glu |
| ··· · · · | Asp | His | Phe 675 | Ile | Thr | Val | Asp | Ala 680 | Val | Gly | Cys | Phe | Glu 685 | Gly | Asp | Glu |
| | Glu | Glu 690 | Glu | Glu | Asp | Asp | Glu 695 | Asp | Glu | Glu | Glu | Ile 700 | Lys | Val | Glu | Glu |
| | Glu 705 | Leu | Cys | Lys | Gln | Val 710 | Arg | Ser | Arg | Asp | Ile 715 | Ser | Arg | Glu | Glu | Trp 720 |
| | Lys | Gly | Ser | Glu | Thr 725 | Tyr | Ser | Pro | Asn | Thr 730 | Ala | Tyr | Gly | Val | Asp 735 | Phe |
| | Leu | Val | Pro | Val 740 | Met | Gly | Tyr | Ile | Cys 745 | Arg | Ile | Cys | His | Lys 750 | Phe | Tyr |
| | His | Ser | Asn 755 | Ser | Gly | Ala | Gln | Leu 760 | Ser | His | Cys | Lys | Ser 765 | Leu | Gly | His |
| | | 770 | | | | | 775 | - | | | - | 780 | | Ser | | |
| | 785 | | | | | 790 | | - | | | 795 | | | Asn | | 800 |
| | | | | | 805 | | | | | 810 | | | | Pro | 815 | |
| | | _ | - | 820 | | | | | 825 | | Arg | Pro | Ser | Gln 830 | Pro | Pro |
| | Leu | Pro | Arg 835 | Arg | Ser | Thr | Arg | Leu 840 | Lys | Thr | | | | | | |

<210> 33

<211> 837

<212> PRT

<213> Homo sapiens

<400> 33

Met Phe Ser Gln Gln Gln Gln Gln Gln Leu Gln Gln Gln Gln Gln Ala 1 5 10 15

Pro Leu Pro Met Ala Val Ser Arg Gly Leu Pro Pro Gln Gln Pro Gln 20 25 30

Gln Pro Leu Leu Asn Leu Gln Gly Thr Asn Ser Ala Ser Leu Leu Asn 35 40 45

Gly Ser Met Leu Gln Arg Ala Leu Leu Gln Gln Leu Gln Gly Leu 50 55 60

Asp Gln Phe Ala Met Pro Pro Ala Thr Tyr Asp Thr Ala Gly Leu Thr 65 70 75 80

Met Pro Thr Ala Thr Leu Gly Asn Leu Arg Gly Tyr Gly Met Ala Ser 85 90 95

Pro Gly Leu Ala Ala Pro Ser Leu Thr Pro Pro Gln Leu Ala Thr Pro 100 105 110

Asn Leu Gln Gln Phe Phe Pro Gln Ala Thr Arg Gln Ser Leu Leu Gly 115 120 125

Pro Pro Pro Val Gly Val Pro Met Asn Pro Ser Gln Phe Asn Leu Ser 130 135 140

Gly Arg Asn Pro Gln Lys Gln Ala Arg Thr Ser Ser Ser Thr Thr Pro 145 150 155 160

Asn Arg Lys Asp Ser Ser Ser Gln Thr Met Pro Val Glu Asp Lys Ser 165 170 175

Asp Pro Pro Glu Gly Ser Glu Glu Ala Ala Glu Pro Arg Met Asp Thr 180 185 190

Pro Glu Asp Gln Asp Leu Pro Pro Cys Pro Glu Asp Ile Ala Lys Glu

195 200 205

| Lys | Arg 210 | Thr | Pro | Ala | Pro | Glu 215 | Pro | Glu | Pro | Cys | Glu 220 | Ala | Ser | Glu | Leu |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Pro 225 | Ala | Lys | Arg | Leu | Arg 230 | Ser | Ser | Glu | Glu | Pro 235 | Thr | Glu | Lys | Glu | Pro 240 |
| Pro | Gly | Gln | Leu | Gln 245 | Val | Lys | Ala | Gln | Pro 250 | Gln | Ala | Arg | Met | Thr 255 | Val |
| Pro | Lys | Gln | Thr 260 | Gln | Thr | Pro | Asp | Leu 265 | Leu | Pro | Glu | Ala | Leu 270 | Glu | Ala |
| Gln | Val | Leu 275 | Pro | Arg | Phe | Gln | Pro 280 | Arg | Val | Leu | Gln | Val 285 | Gln | Ala | Gln |
| Val | Gln 290 | Ser | Gln | Thr | Gln | Pro 295 | Arg | Ile | Pro | Ser | Thr 300 | Asp | Thr | Gln | Val |
| Gln 305 | Pro | Lys | Leu | Gln | Lys 310 | Gln | Ala | Gln | Thr | Gln 315 | Thr | Ser | Pro | Glu | His 320 |
| Leu | Val | Leu | Gln | Gln 325 | Lys | Gln | Val | Gln | Pro 330 | Gln | Leu | Gln | Gln | Glu 335 | Ala |
| Glu | Pro | Gln | Lys 340 | Gln | Val | Gln | Pro | Gln 345 | Val | Gln | Pro | Gln | Ala 350 | His | Ser |
| Gln | Gly | Pro 355 | Arg | Gln | Val | Gln | Leu 360 | Gln | Gln | Glu | Ala | Glu 365 | Pro | Leu | Lys |
| Gln | Val 370 | Gln | Pro | Gln | Val | His 375 | Thr | Gln | Ala | Gln | Pro 380 | Ser | Val | Gln | Pro |
| Gln 385 | Glu | His | Pro | Pro | Ala 390 | Gln | Val | Ser | Val | Gln 395 | Pro | Pro | Glu | Gln | Thr 400 |
| His | Glu | Gln | Pro | His 405 | Thr | Gln | Pro | Gln | Val 410 | Ser | Leu | Leu | Ala | Pro 415 | Glu |
| Gln | Thr | Pro | Val | Val | Val | His | Val | Cys | Gly | Leu | Glu | Met | Pro | Pro | Asp |

| Ala | Val | Glu 435 | Ala | Gly | Gly | Gly | Met 440 | Glu | Lys | Thr | Leu | Pro 445 | Glu | Pro | Val |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Gly | Thr 450 | Gln | Val | Ser | Met | Glu 455 | Glu | Ile | Gln | Asn | Glu 460 | Ser | Ala | Cys | Gly |
| Leu 465 | Asp | Val | Gly | Glu | Cys 470 | Glu | Asn | Arg | Ala | Arg 475 | Glu | Met | Pro | Gly | Val 480 |
| Trp | Gly | Ala | Gly | Gly 485 | Ser | Leu | Lys | Val | Thr 490 | Ile | Leu | Gln | Ser | Ser 495 | Asp |
| Ser | Arg | Ala | Phe 500 | Ser | Thr | Val | Pro | Leu 505 | Thr | Pro | Val | Pro | Arg 510 | Pro | Ser |
| Asp | Ser | Val 515 | Ser | Ser | Thr | Pro | Ala 520 | Ala | Thr | Ser | Thr | Pro 525 | Ser | Lys | Gln |
| Ala | Leu 530 | Gln | Phe | Phe | Cys | Tyr 535 | Ile | Cys | Lys | Ala | Ser 540 | Cys | Ser | Ser | Gln |
| Gln 545 | Glu | Phe | Gln | Asp | His 550 | Met | Ser | Glu | Pro | Gln 555 | His | Gln | Gln | Arg | Leu 560 |
| Gly | Glu | Ile | Gln | His 565 | Met | Ser | Gln | Ala | Cys 570 | Leu | Leu | Ser | Leu | Leu 575 | Pro |
| Val | Pro | Arg | Asp 580 | Val | Leu | Glu | Thr | Glu 585 | Asp | Glu | Glu | Pro | Pro 590 | Pro | Arg |
| Arg | Trp | Cys 595 | Asn | Thr | Cys | Gln | Leu 600 | Tyr | Tyr | Met | Gly | Asp 605 | Leu | Ile | Gln |
| His | Arg 610 | Arg | Thr | Gln | Asp | His 615 | Lys | Ile | Ala | Lys | Gln 620 | Ser | Leu | Arg | Pro |
| Phe 625 | Cys | Thr | Val | Cys | Asn 630 | Arg | Tyr | Phe | Lys | Thr 635 | Pro | Ārg | Lys | Phe | Val 640 |
| Glu | His | Val | Lys | Ser 645 | Gln | Gly | His | Lys | Asp 650 | Lys | Ala | Lys | Glu | Leu 655 | Lys |

Ser Leu Glu Lys Glu Ile Ala Gly Gln Asp Glu Asp His Phe Ile Thr 660 665 670

Val Asp Ala Val Gly Cys Phe Glu Gly Asp Glu Glu Glu Glu Glu Asp 675 680 685

Asp Glu Asp Glu Glu Glu Ile Glu Val Glu Glu Glu Leu Cys Lys Gln 690 695 700

Val Arg Ser Arg Asp Ile Ser Arg Glu Glu Trp Lys Gly Ser Glu Thr 705 710 715 720

Tyr Ser Pro Asn Thr Ala Tyr Gly Val Asp Phe Leu Val Pro Val Met 725 730 735

Gly Tyr Ile Cys Arg Ile Cys His Lys Phe Tyr His Ser Asn Ser Gly 740 745 750

Ala Gln Leu Ser His Cys Lys Ser Leu Gly His Phe Glu Asn Leu Gln 755 760 765

Lys Tyr Lys Ala Ala Lys Asn Pro Ser Pro Thr Thr Arg Pro Val Ser 770 780

Arg Arg Cys Ala Ile Asn Ala Arg Asn Ala Leu Thr Ala Leu Phe Thr 785 790 795 800

Ser Ser Gly Arg Pro Pro Ser Gln Pro Asn Thr Gln Asp Lys Thr Pro 805 810 815

Ser Lys Val Thr Ala Arg Pro Ser Gln Pro Pro Leu Pro Arg Arg Ser 820 825 830

Thr Arg Leu Lys Thr 835

<210> 34

<211> 818

<212> PRT

<213> Homo sapiens

<400> 34

| Leu | Gln | Gln | Leu 20 | Gln | Gln | Gln | Gln | Leu 25 | Gln | Gln | Gln | Gln | Leu 30 | Gln | Gln |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Gln | Gln | Leu 35 | Leu | Gln | Leu | Gln | Gln 40 | Leu | Leu | Gln | Gln | Ser 45 | Pro | Pro | Gln |
| Ala | Pro 50 | Leu | Pro | Met | Ala | Val 55 | Ser | Arg | Gly | Leu | Pro 60 | Pro | Gln | Gln | Pro |
| Gln 65 | Gln | Pro | Leu | Leu | Asn 70 | Leu | Gln | Gly | Thr | Asn 75 | Ser | Ala | Ser | Leu | Leu 80 |
| Asn | Gly | Ser | Met | Leu 85 | Gln | Arg | Ala | Leu | Leu 90 | Leu | Gln | Gln | Leu | Gln 95 | Gly |
| Asn | Leu | Arg | Gly 100 | Tyr | Gly | Met | Ala | Ser 105 | Pro | Gly | Leu | Ala | Ala 110 | Pro | Ser |
| Leu | Thr | Pro 115 | Pro | Gln | Leu | Ala | Thr 120 | Pro | Asn | Leu | Gln | Gln 125 | Phe | Phe | Pro |
| Gln | Ala 130 | Thr | Arg | Gln | Ser | Leu 135 | Leu | Gly | Pro | Pro | Pro 140 | Val | Gly | Val | Pro |
| Met 145 | Asn | Pro | Ser | Gln | Phe 150 | Asn | Leu | Ser | Gly | Arg 155 | Asn | Pro | Gln | Lys | Gln 160 |
| Ala | Arg | Thr | Ser | Ser 165 | Ser | Thr | Thr | Pro | Asn 170 | Arg | Lys | Asp | Ser | Ser 175 | Ser |
| Gln | Thr | Met | Pro 180 | Val | Glu | Asp | Lys | Ser 185 | Asp | Pro | Pro | Glu | Gly 190 | Ser | Glu |
| Glu | Ala | Ala 195 | Glu | Pro | Arg | Met | Asp 200 | Thr | Pro | Glu | Asp | Gln 205 | Asp | Leu | Pro |
| Pro | Cys 210 | Pro | Glu | Asp | Ile | Ala 215 | Lys | Glu | Lys | Arg | Thr 220 | Pro | Ala | Pro | Glu |

Pro Glu Pro Cys Glu Ala Ser Glu Leu Pro Ala Lys Arg Leu Arg Ser

| Ser | Glu | Glu | Pro | Thr 245 | Glu | Lys | Glu | Pro | Pro 250 | Gly | Gln | Leu | Gln | Val 255 | Lys |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Ala | Gln | Pro | Gln 260 | Ala | Arg | Met | Thr | Val 265 | Pro | Lys | Gln | Thr | Gln 270 | Thr | Pro |
| Asp | Leu | Leu 275 | Pro | Glu | Ala | Leu | Glu 280 | Ala | Gln | Val | Leu | Pro 285 | Arg | Phe | Gln |
| | Arg 290 | Val | Leu | Gln | Val | Gln 295 | Ala | Gln | Val | Gln | Ser 300 | Gln | Thr | Gln | Pro |
| Arg 305 | Ile | Pro | Ser | Thr | Asp 310 | Thr | Gln | Val | Gln | Pro 315 | Lys | Leu | Gln | Lys | Gln 320 |
| Ala | Gln | Thr | Gln | Thr 325 | Ser | Pro | Glu | His | Leu 330 | Val | Leu | Gln | Gln | Lys 335 | Gln |
| Val | Gln | Pro | Gln 340 | Leu | Gln | Gln | Glu | Ala 345 | Glu | Pro | Gln | Lys | Gln 350 | Val | Gln |
| Pro | Gln | Val 355 | His | Thr | Gln | Ala | Gln 360 | Pro | Ser | Val | Gln | Pro 365 | Gln | Glu | His |
| | Pro 370 | Ala | Gln | Val | Ser | Val 375 | Gln | Pro | Pro | Glu | Gln 380 | Thr | His | Glu | Gln |
| Pro 385 | His | Thr | Gln | Pro | Gln 390 | Val | Ser | Leu | Leu | Ala 395 | Pro | Glu | Gln | Thr | Pro 400 |
| Val | Val | Val | His | Val 405 | Cys | Gly | Leu | Glu | Met 410 | Pro | Pro | Asp | Ala | Val 415 | Glu |
| Ala | Gly | Gly | Gly 420 | Met | Glu | Lys | Thr | Leu 425 | Pro | Glu | Pro | Val | Gly 430 | Thr | Gln |
| Val | Ser | Met 435 | Glu | Glu | Ile | Gln | Asn 440 | Glu | Ser | Ala | Cys | Gly 445 | Leu | Asp | Val |
| Gly | Glu 450 | Cys | Glu | Asn | Arg | Ala 455 | Arg | Glu | Met | Pro | Gly 460 | Val | Trp | Gly | Ala |

| Gly Gly Set 465 | : Leu Lys | Val Thr 470 | lle Leu | Gln Ser 475 | | Ser Ar | g Ala 480 |
|-------------------------|------------------|----------------|----------------|----------------|----------------|-----------------|--------------|
| Phe Ser Th | Val Pro 485 | | Pro Val | Pro Arg 490 | Pro Sei | Asp Se | |
| Ser Ser Th | Pro Ala 500 | Ala Thr | Ser Thr 505 | | Lys Glr | n Ala Le 510 | u Gln |
| Phe Phe Cys | _ | Cys Lys | Ala Ser 520 | Cys Ser | Ser Glr 525 | | u Phe |
| Gln Asp His | Met Ser | Glu Pro 535 | | Gln Gln | Arg Let 540 | ı Gly Gl | u Ile |
| Gln His Me | Ser Gln | Ala Cys 550 | Leu Leu | Ser Leu 555 | | Val Pr | o Arg 560 |
| Asp Val Le | ı Glu Thr 565 | _ | Glu Glu | Pro Pro 570 | Pro Arg | J Arg Tr 57 | |
| Asn Thr Cy | 580 Seu | Tyr Tyr | Met Gly 585 | _ | lle Glr | n His Ar 590 | g Arg |
| Thr Gln As ₁ | _ | Ile Ala | Lys Gln 600 | Ser Leu | Arg Pro | | s Thr |
| Val Cys Ası 610 | n Arg Tyr | Phe Lys 615 | | Arg Lys | Phe Val | . Glu Hi | s Val |
| Lys Ser Gli 625 | n Gly His | Lys Asp 630 | Lys Ala | Lys Glu 635 | | s Ser Le | u Glu 640 |
| Lys Glu Il | e Ala Gly 645 | _ | Glu Asp | His Phe 650 | Ile Thi | Val As | _ |
| Val Gly Cy | Phe Glu 660 | Gly Asp | Glu Glu 665 | | Glu Asp | Asp Gl 670 | u Asp |
| Glu Glu Glu 67 | | Val Glu | Glu Glu 680 | Leu Cys | Lys Glr 685 | | g Ser |

Arg Asp Ile Ser Arg Glu Glu Trp Lys Gly Ser Glu Thr Tyr Ser Pro 690 695 Asn Thr Ala Tyr Gly Val Asp Phe Leu Val Pro Val Met Gly Tyr Ile 705 Cys Arg Ile Cys His Lys Phe Tyr His Ser Asn Ser Gly Ala Gln Leu 725 Ser His Cys Lys Ser Leu Gly His Phe Glu Asn Leu Gln Lys Tyr Lys 745 Ala Ala Lys Asn Pro Ser Pro Thr Thr Arg Pro Val Ser Arg Arg Cys 755 760 Ala Ile Asn Ala Arg Asn Ala Leu Thr Ala Leu Phe Thr Ser Ser Gly 770 775 Arg Pro Pro Ser Gln Pro Asn Thr Gln Asp Lys Thr Pro Ser Lys Val 790 795 800 785 Thr Ala Arg Pro Ser Gln Pro Pro Leu Pro Arg Arg Ser Thr Arg Leu 805 810 815 Lys Thr <210> 35 <211> 820 <212> PRT <213> Homo sapiens Pro Leu Pro Met Ala Val Ser Arg Gly Leu Pro Pro Gln Gln Pro Gln 5 10 Gln Pro Leu Leu Asn Leu Gln Gly Thr Asn Ser Ala Ser Leu Leu Asn 25 Gly Ser Met Leu Gln Arg Ala Leu Leu Gln Gln Leu Gln Gly Asn 40 35

60

Leu Arg Gly Tyr Gly Met Ala Ser Pro Gly Leu Ala Ala Pro Ser Leu

55

| Thr Pro 65 | Pro Gln | Leu Ala 70 | Thr | Pro | Asn | Leu | Gln 75 | Gln | Phe | Phe | Pro | Gln 80 |
|----------------|----------------|----------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Ala Thr | Arg Gln | Ser Leu 85 | Leu | Gly | Pro | Pro 90 | Pro | Val | Gly | Val | Pro 95 | Met |
| Asn Pro | Ser Gln 100 | Phe Asn | Leu | Ser | Gly 105 | Arg | Asn | Pro | Gln | Lys 110 | Gln | Ala |
| Arg Thr | Ser Ser 115 | Ser Thr | Thr | Pro 120 | Asn | Arg | Lys | Thr | Met 125 | Pro | Val | Glu |
| Asp Lys 130 | Ser Asp | Pro Pro | Glu 135 | Gly | Ser | Glu | Glu | Ala 140 | Ala | Glu | Pro | Arg |
| Met Asp 145 | Thr Pro | Glu Asp 150 | Gln | Asp | Leu | Pro | Pro 155 | Cys | Pro | Glu | Asp | Ile 160 |
| Ala Lys | Glu Lys | Arg Thr 165 | Pro | Ala | Pro | Glu 170 | Pro | Glu | Pro | Cys | Glu 175 | Ala |
| Ser Glu | Leu Pro 180 | Ala Lys | Arg | Leu | Arg 185 | Ser | Ser | Glu | Glu | Pro 190 | Thr | Glu |
| Lys Glu | Pro Pro 195 | Gly Gln | Leu | Gln 200 | Val | Lys | Ala | Gln | Pro 205 | Gln | Ala | Arg |
| Met Thr 210 | Val Pro | Lys Gln | Thr 215 | Gln | Thr | Pro | Asp | Leu 220 | Leu | Pro | Glu | Ala |
| Leu Glu 225 | Ala Gln | Val Leu 230 | Pro | Arg | Phe | Gln | Pro 235 | Arg | Val | Leu | Gln | Val 240 |
| Gln Ala | Gln Val | Gln Ser 245 | Gln | Thr | Gln | Pro 250 | Arg | Ile | Pro | Ser | Thr 255 | Asp |
| Thr Gln | Val Gln 260 | Pro Lys | Leu | Gln | Lys 265 | Gln | Ala | Gln | Thr | Gln 270 | Thr | Ser |
| Pro Glu | His Leu 275 | Val Leu | Gln | Gln 280 | Lys | Gln | Val | Gln | Pro 285 | Gln | Leu | Gln |

| Gln | Glu 290 | Ala | Glu | Pro | Gln | Lys 295 | Gln | Val | Gln | Pro | Gln 300 | Val | GIn | Pro | Gln |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Ala 305 | His | Ser | Gln | Gly | Pro 310 | Arg | Gln | Val | Gln | Leu 315 | Gln | Gln | Glu | Ala | Glu 320 |
| Pro | Leu | Lys | Gln | Val 325 | Gln | Pro | Gln | Val | Gln 330 | Pro | Gln | Ala | His | Ser 335 | Gln |
| Pro | Pro | Arg | Gln 340 | Val | Gln | Leu | Gln | Leu 345 | Gln | Lys | Gln | Val | Gln 350 | Thr | Gln |
| Thr | Tyr | Pro 355 | Gln | Val | His | Thr | Gln 360 | Ala | Gln | Pro | Ser | Val 365 | Gln | Pro | Gln |
| Glu | His 370 | Pro | Pro | Ala | Gln | Val 375 | Ser | Val | Gln | Pro | Pro 380 | Glu | Gln | Thr | His |
| Glu 385 | Gln | Pro | His | Thr | Gln 390 | Pro | Gln | Val | Ser | Leu 395 | Leu | Ala | Pro | Glu | Gln 400 |
| Thr | Pro | Val | Val | Val 405 | His | Val | Cys | Gly | Leu 410 | Glu | Met | Pro | Pro | Asp 415 | Ala |
| Val | Glu | Ala | Gly 420 | Gly | Ser | Met | Glu | Lys 425 | Thr | Leu | Pro | Glu | Pro 430 | Val | Gly |
| Thr | Gln | Val 435 | Ser | Met | Glu | Glu | Ile 440 | Gln | Asn | Glu | Ser | Ala 445 | Cys | Gly | Leu |
| Asp | Val 450 | Gly | Glu | Cys | Glu | Asn 455 | Arg | Ala | Arg | Glu | Met 460 | Pro | Gly | Val | Trp |
| Gly 465 | Ala | Gly | Gly | Ser | Leu 470 | Lys | Val | Thr | Ile | Leu 475 | Gln | Ser | Ser | Asp | Ser 480 |
| Arg | Ala | Phe | Ser | Thr 485 | Val | Pro | Leu | Thr | Pro 490 | Val | Pro | Arg | Pro | Ser 495 | Asp |
| Ser | Val | Ser | Ser 500 | Thr | Pro | Ala | Ala | Thr 505 | Ser | Thr | Pro | Ser | Lys 510 | Gln | Ala |

| Leu Gln 1 | Phe Phe 515 | Cys Ty | : Ile | Cys 520 | Lys | Ala | Ser | Cys | Ser 525 | Ser | Gln | Gln |
|------------------|----------------|----------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Glu Phe (| Gln Asp | His Met | Ser 535 | Glu | Pro | Gln | His | Gln 540 | Gln | Arg | Leu | Gly |
| Glu Ile (545 | Gln His | Met Ser | | Ala | Cys | Leu | Leu 555 | Ser | Leu | Leu | Pro | Val 560 |
| Pro Arg A | Asp Val | Leu Glu 565 | Thr | Glu | Asp | Glu 570 | Glu | Pro | Pro | Pro | Arg 575 | Arg |
| Trp Cys 7 | Asn Thr 580 | Cys Gli | ı Leu | Tyr | Tyr 585 | Met | Gly | Asp | Leu | Ile 590 | Gln | His |
| Arg Arg | Thr Gln 595 | Asp His | arg | Ile 600 | Ala | Lys | Gln | Ser | Leu 605 | Arg | Pro | Phe |
| Cys Thr 610 | Val Cys | Asn Arg | Tyr 615 | Phe | Lys | Thr | Pro | Arg 620 | Lys | Phe | Val | Glu |
| His Val 1 625 | Lys Ser | Gln Gly | | Lys | Asp | Lys | Ala 635 | Lys | Glu | Leu | Lys | Ser 640 |
| Leu Glu | Lys Glu | Ile Ala 645 | Gly | Gln | Asp | Glu 650 | Asp | His | Phe | Ile | Thr 655 | Val |
| Asp Ala | Val Gly 660 | Cys Phe | e Glu | Gly | Asp 665 | Glu | Glu | Glu | Glu | Glu 670 | Asp | Asp |
| Glu Asp (| Glu Glu 675 | Glu Ile | e Glu | Val 680 | Glu | Glu | Glu | Leu | Cys 685 | Lys | Gln | Val |
| Arg Ser A | Arg Asp | Ile Sei | Arg 695 | Glu | Glu | Trp | Lys | Gly 700 | Ser | Glu | Thr | Tyr |
| Ser Pro 1 705 | Asn Thr | Ala Tyr 710 | | Val | Asp | Phe | Leu 715 | Val | Pro | Val | Met | Gly 720 |
| Tyr Ile (| Cys Arg | Ile Cys | His | Lys | Phe | Tyr 730 | His | Asn | Asn | Ser | Gly 735 | Ala |
| Gln Leu S | Ser His | Cys Lys | Ser | Leu | Gly | His | Phe | Glu | Asn | Leu | Gln | Lys |

740 745 750

Tyr Lys Ala Ala Lys Asn Pro Ser Pro Thr Thr Arg Pro Val Ser Arg
755 760 765

Arg Cys Ala Ile Asn Ala Arg Asn Ala Leu Thr Ala Leu Phe Thr Ser
770 780

Ser Gly Arg Pro Pro Ser Gln Pro Asn Thr Gln Asp Lys Thr Pro Ser 785 790 795 800

Lys Val Thr Ala Arg Pro Ser Gln Pro Pro Leu Pro Arg Arg Ser Thr 805 810 815

Arg Leu Lys Thr 820

<210> 36

<211> 414

<212> PRT

<213> Homo sapiens

<400> 36

Leu Gl
n Gl
n Leu Gl
n Gl<

Gln Gln Leu Leu Gln Leu Gln Gln Leu Gln Gln Ser Pro Pro Gln 35 40 45

Ala Pro Leu Pro Met Ala Val Ser Arg Gly Leu Pro Pro Gln Gln Pro 50 55 60

Gln Gln Pro Leu Leu Asn Leu Gln Gly Thr Asn Ser Ala Ser Leu Leu 65 70 75 80

Asn Gly Ser Met Leu Gln Arg Ala Leu Leu Gln Gln Gln Gly 85 90 95

Asn Leu Arg Gly Tyr Gly Met Ala Ser Pro Gly Leu Ala Ala Pro Ser

| Leu | Thr | Pro 115 | Pro | Gln | Leu | Ala | Thr 120 | Pro | Asn | Leu | Gln | Gln 125 | Phe | Phe | Pro |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Gln | Ala 130 | Thr | Arg | Gln | Ser | Leu 135 | Leu | Gly | Pro | Pro | Pro 140 | Val | Gly | Val | Pro |
| Met 145 | Asn | Pro | Ser | Gln | Phe 150 | Asn | Leu | Ser | Gly | Arg 155 | Asn | Pro | Gln | Lys | Gln 160 |
| Ala | Arg | Thr | Ser | Ser 165 | Ser | Thr | Thr | Pro | Asn 170 | Arg | Lys | Asp | Ser | Ser 175 | Ser |
| Gln | Thr | Met | Pro 180 | Val | Glu | Asp | Lys | Ser 185 | Asp | Pro | Pro | Glu | Gly 190 | Ser | Glu |
| Glu | Ala | Ala 195 | Glu | Pro | Arg | Met | Asp 200 | Thr | Pro | Glu | Asp | Gln 205 | Asp | Leu | Pro |
| Pro | Cys 210 | Pro | Glu | Asp | Ile | Ala 215 | Lys | Glu | Lys | Arg | Thr 220 | Pro | Ala | Pro | Glu |
| Pro 225 | Glu | Pro | Cys | Glu | Ala 230 | Ser | Glu | Leu | Pro | Ala 235 | Lys | Arg | Leu | Arg | Ser 240 |
| Ser | Glu | Glu | Pro | Thr 245 | Glu | Lys | Glu | Pro | Pro 250 | Gly | Gln | Leu | Gln | Val 255 | Lys |
| Ala | Gln | Pro | Gln 260 | Ala | Arg | Met | Thr | Val 265 | Pro | Lys | Gln | Thr | Gln 270 | Thr | Pro |
| Asp | Leu | Leu 275 | Pro | Glu | Ala | Leu | Glu 280 | Ala | Gln | Val | Leu | Pro 285 | Arg | Phe | Gln |
| Pro | Arg 290 | Val | Leu | Gln | Val | Gln 295 | Ala | Gln | Val | Gln | Ser 300 | Gln | Thr | Gln | Pro |
| Arg 305 | Ile | Pro | Ser | Thr | Asp 310 | Thr | Gln | Val | Gln | Pro 315 | Lys | Leu | Gln | Lys | Gln 320 |
| Ala | Gln | Thr | Gln | Thr 325 | Ser | Pro | Glu | His | Leu 330 | Val | Leu | Gln | Gln | Lys 335 | Gln |

Val Gln Pro Gln Leu Gln Gln Glu Ala Glu Pro Gln Lys Gln Val Gln 340 345 Pro Gln Val Gln Pro Gln Ala His Ser Gln Gly Pro Arg Gln Val Gln 355 Leu Gln Gln Glu Ala Glu Pro Leu Lys Gln Val Gln Pro Gln Val Gln 375 Pro Gln Ala His Ser Gln Pro His Leu Pro Gln Val Leu Ser Gln Gln 390 395 Leu Arg Gly Thr Ala Leu Pro Leu Gln Val Pro Gly Pro Leu 405 410 <210> 37 <211> 75 <212> PRT <213> Homo sapiens <400> 37 Leu Gln Gln Gln Gln Gln Leu Gln Gln Leu Gln Gln Gln Leu 5 10 Gln Gln Gln Gln Gln Gln Gln Leu Gln Leu Gln Leu Gln Leu 20 25 Leu Gln Gln Ser Pro Pro Gln Ala Pro Leu Pro Met Ala Val Ser Arg 35 40 Gly Leu Pro Pro Gln Gln Pro Gln Pro Leu Leu Asn Leu Gln Gly 50 55 Thr Asn Ser Ala Ser Leu Leu Asn Gly Ser Met 65 70 <210> 38 <211> 33 <212> PRT <213> Homo sapiens <400> 38

10

15

Gln Gln Leu Gln Gln Gln Gln Gln Leu Gln Gln Gln Leu

1 . 5

Pro <210> 39 <211> 52 <212> PRT <213> Homo sapiens <400> 39 Met Phe Ser Gln Gln Gln Gln Gln Leu Gln Gln Gln Gln Gln Gln Leu Gln Gln Leu Gln Gln Gln Leu Gln Gln Gln Leu Gln Gln Leu Gln Gln 25 Gln Gln Leu Gln Leu Gln Gln Leu Gln Gln Ser Pro Pro Gln 35 40 Ala Pro Leu Pro 50 <210> 40 <211> 26 <212> PRT <213> Homo sapiens <400> 40 Pro Pro Thr Pro Arg Arg Asp Val Phe Ala His Val Pro Val Gln Gly 5 15 Trp Ser Thr Ala Arg Leu Val Thr Asp Met 20 <210> 41 <211> 24 <212> PRT <213> Homo sapiens <400> 41 Gly Leu Asp Gln Phe Ala Met Pro Pro Ala Thr Tyr Asp Thr Ala Gly 1 5 10

Gln Gln Gln Leu Leu Gln Leu Gln Gln Leu Gln Gln Ser Pro 25

<210> 42 <211> 56 <212> PRT <213> Homo sapiens <400> 42 Pro Gln Val Gln Pro Gln Ala His Ser Gln Gly Pro Arg Gln Val Gln Leu Gln Gln Glu Ala Glu Pro Leu Lys Gln Val Gln Pro Gln Val Gln . 25 Pro Gln Ala His Ser Gln Pro Pro Arg Gln Val Gln Leu Gln 40 Lys Gln Val Gln Thr Gln Thr Tyr 50 <210> 43 <211> 28 <212> PRT <213> Homo sapiens <400> 43 Pro Gln Val Gln Pro Gln Ala His Ser Gln Pro Pro Arg Gln Val Gln 5 10 Leu Gln Leu Gln Lys Gln Val Gln Thr Gln Thr Tyr 20 <210> 44 <211> 112 <212> PRT <213> Homo sapiens <400> 44 Gln Val Gln Ser Gln Thr Gln Pro Arg Ile Pro Ser Thr Asp Thr Gln 5

Leu Thr Met Pro Thr Ala Thr Leu 20

Val Gln Pro Lys Leu Gln Lys Gln Ala Gln Thr Gln Thr Ser Pro Glu

His Leu Val Leu Gln Gln Lys Gln Val Gln Pro Gln Leu Gln Gln Glu 35 40 45

Ala Glu Pro Gln Lys Gln Val Gln Pro Gln Val Gln Pro Gln Ala His 50 55 60

Ser Gln Gly Pro Arg Gln Val Gln Leu Gln Gln Glu Ala Glu Pro Leu 65 70 75 80

Lys Gln Val Gln Pro Gln Val Gln Pro Gln Ala His Ser Gln Pro Pro 85 90 95

Arg Gln Val Gln Leu Gln Leu Gln Lys Gln Val Gln Thr Gln Thr Tyr
100 105 110

<210> 45

<211> 2687

<212> DNA

<213> Mouse

<400> 45

catqttcaac ccgcaactcc agcagcagca acagttgcag cagcagcagc aacagttgca 60 gcagcagctc cagcagcagc agetccagca gcagcaacag cagatactgc agetccaaca 120 qctqctqcaa caqtccccac cacaggcctc cttgtccatt cctgtcagcc ggggcctccc 180 ccagcagtca tccccgcaac agettctgag tctccagggc ctccactcga cctccctgct 240 caatggcccc atgctgcaaa gagctttgct cctacagcag ttgcaaggac tggaccagtt 300 tgcaatgcca ccagccacgt atgacggtgc cagcctcacc atgcctacgg caacactggg 360 taacctccgt gctttcaatg tgacagccc aagcctagca gctcccagcc ttacaccacc 420 ccagatggtc accccaaatc tgcagcagtt ctttccccag gctactcgac agtctctgct 480 ggggcctcct cctgttgggg tcccaataaa cccttctcag ctcaaccact cagggaggaa 540 caccagaaa caggccagaa cccctcttc caccacccc aatcgcaagg attcttcttc 600 tcagacggtg cctctggaag acagggaaga ccccacagag gggtctgagg aagccacgga 660 gctccagatg gacacatgtg aagaccaaga ttcactagtc ggtccagata gcatgctgag 720 tgagccccaa gtgcctgagc ctgagccctt tgagacattg gaaccaccag ccaagaggtg 780 caqqaqctca qaqqaqtcca ccqaqaaaqq ccctacaggq cagccacaag caaggqtcca 840 geeteagace cagatgacag caccaaagca gacacagace ceggategge tgeetgagee 900

960 accagaagte caaatgetge egegtateca gecacaggea etgeagatee agacecagee 1020 aaagetgetg aggeaggeae agacacagae etetecagag caettagege eecageagga 1080 tcaggtagag ccacaggtac catcacagcc cccatggcag ttgcagccac gggagacaga 1140 cccaccgaac caagctcagg cacagaccca gcctcagccc ctctggcagg cgcagtcaca 1200 gaagcaggcc cagacacagg cacatccaca ggtacccacc caagcacagt cacaggagca 1260 gacatcagag aagacccagg accagcctca gacctggcca caggggtcag tacccccacc agaacaagcg tcaggtccag cctgtgccac ggaaccacag ctatcctctc acgctgcaga 1320 1380 agctgggagt gacccagaca aggccttgcc agaaccagta agtgcccaga gcagtgaaga caggagccgg gaggcgtccg ctggtggcct ggatttggga gaatgtgaaa agagagcggg 1440 1500 agagatgetg gggatgtggg gggetgggag etecetgaag gteaceatee tgeagagtag caacageegg geetttaaca ecacaceet cacatetgga eetegeeetg gggaetetae 1560 1620 ctctgccacc cctgccattg ccagcacacc ctccaagcaa agcctccagt tcttctgcta catctgcaag gccagcagca gcagccagca ggagttccag gatcacatgt cagaggctca 1680 1740 gcaccaacag cggcttgggg aaatacaaca ctcgagccag acctgcctgc tgtccctgct 1800 gcccatgcct cgggacatcc tggagaaaga agcggaagat cctccgccca aacgctggtg caacacetge caggtgtact acgtgggaga cttgatecag cacegtagga cacaggagca 1860 caaggttgcc aaacaatccc tgaggccctt ctgcaccata tgcaaccgtt acttcaagac 1920 1980 ccctcgaaag tttgtggagc acgtgaagtc ccagggacac aaggacaagg cccaagagct 2040 gaagacactt gaaaaggaga caggcagccc agatgaggac cacttcatca ctgtggacgc cgtcggttgc tttgagagtg gtcaagaaga ggacgaggat gacgacgagg aagaagaaga 2100 2160 agaaggagag attgaggetg aggaggaatt etgeaageag gtgaageega gagaaacate 2220 ctcagagcaa gggaagggct ctgagacgta caaccccaac acagcctatg gtgaggattt 2280 cctggtgcca gtgatgggct atgtctgtca aatctgtcac aagttctacg acagcaactc 2340 agaattgegg ettteteaet geaagteeet ggeeeaettt gagaaeetge agaaataeaa agccaagaac ccaagccctc ctcctacccg gcctgtgagc cgcaagtgtg ccatcaacgc 2400 2460 ecgeaacgee etgaetgeae tgtteacete tagecaceag eccageecee aggaeacagt gaaaatgccc agcaaggtga agcctggatc ccccggactc cctcctcccc ttcggcgctc 2520 aacacgcctc aaaacctgat agagggagct ctggccactc agcctgacta aggctcagtc 2580 tgctaatgct tcctaggtat ctgtgtagaa atgttcaagt ggttggtgtt tttactcaaa 2640

- <210> 46 <211> 2922 <212> DNA Homo sapiens

<400> 46

tgggggetge ggggeeggee cateegtggg ggegaettga gegttgaggg egegegggga 60 ggcgagccac catgttcagc cagcagcagc agcagctcca gcaacagcag cagcagctcc 120 agcagttaca gcagcagcag ctccagcagc agcaattgca gcagcagcag ttactgcagc 180 tecageaget getecageag tececaceae aggeeeegtt geeeatgget gteageeggg 240 300 ggctccccc gcagcagcca cagcagccgc ttctgaatct ccagggcacc aactcagcct 360 ccctcctcaa cggctccatg ctgcagagag ctttgctttt acagcagttg caaggactgg accagtttgc aatgccacca gccacgtatg acactgccgg tctcaccatg cccacagcaa 420 480 cactgggtaa cctccgaggc tatggcatgg catccccagg cctcgcagcc cccagcctca 540 caccccaca actggccact ccaaatttgc aacagttctt tccccaggcc actcgccagt cettgetggg accteetect gttggggtee ceatgaacce tteecagtte aaccttteag 600 gacggaaccc ccagaaacag gcccggacct cctcctctac cacccccaat cgaaaggatt 660 cttcttctca gacaatgcct gtggaagaca agtcagaccc cccagagggg tctgaggaag 720 780 ccgcagagcc ccggatggac acaccagaag accaagattt accgccctgc ccagaggaca 840 tegecaagga aaaaegeaet eeageaeetg ageetgagee ttgtgaggeg teegagetge 900 cagcaaagag attgaggagc tcagaagagc ccacagagaa ggaacctcca gggcagttac 960 aggtgaagge ceageegeag geeeggatga eagtacegaa acagacacag acaceagace tgctgcctga ggccctggaa gcccaagtgc tgccacgatt ccagccacgg gtcctgcagg 1020 tccaggccca ggtgcagtca cagactcagc cgcggatacc atccacagac acccaggtgc 1080 agccaaagct gcagaagcag gcgcaaacac agacctctcc agagcactta gtgctgcaac 1140 1200 agaagcaggt gcagccacag ctgcagcagg aggcagagcc acagaagcag gtgcagccac 1260 aggtacagec acaggeacat teacagggec caaggeaggt geagetgeag caggaggeag 1320 agccgctgaa gcaggtgcag ccacaggtgc agccccaggc acattcacag cccccaaggc aggtgcaget gcagetgcag aagcaggtee agacacagae atatecacag gtecacacae 1380 aggeaeagee aagegteeag eeacaggage atceteeage geaggtgtea gtacageeac 1440

1500 cagagcagac ccatgagcag cctcacaccc agccgcaggt gtcgttgctg gctccagagc 1560 aaacaccagt tgtggttcat gtctgcgggc tggagatgcc acctgatgca gtagaagctg 1620 gtggaggcat ggaaaagacc ttgccagagc ctgtgggcac ccaagtcagc atggaagaga 1680 ttcagaatga gtcggcctgt ggcctagatg tgggagaatg tgaaaacaga gcgagagaga tgccaggggt atggggcgcc gggggctccc tgaaggtcac cattctgcag agcagtgaca 1740 geogggeett tageactgta cecetgacae etgteeceeg eeccagtgae teegteteet 1800 ccaccctgc ggctaccagc actccctcta agcaggccct ccagttcttc tgctacatct 1860 gcaaggccag ctgctccagc cagcaggagt tccaggacca catgtcggag cctcagcacc 1920 agcagcggct aggggagatc cagcacatga gccaagcctg cctcctgtcc ctgctgcccg 1980 2040 tgccceggga cgtcctggag acagaggatg aggagcctcc accaaggcgc tggtgcaaca cctgccagct ctactacatg ggggacctga tccaacaccg caggacacag gaccacaaga 2100 ttgccaaaca atcettgega ceettetgea cegtttgcaa eegetaette aaaaceeete 2160 2220 gcaagtttgt ggagcacgtg aagtcccagg ggcataagga caaagccaag gagctgaagt cgcttgagaa agaaattgct ggccaagatg aggaccactt cattacagtg gacgctgtgg 2280 gttgcttcga gggtgatgaa gaagaggaag aggatgatga ggatgaagaa gagatcgagg 2340 2400 ttgaggagga actctgcaag caggtgaggt ccagagatat atccagagag gagtggaagg 2460 geteggagae etacageece aatactgeat atggtgtgga etteetggtg eeegtgatgg 2520 gctatatctg ccgcatctgc cacaagttct atcacagcaa ctcaggggca cagctctccc 2580 actgcaagtc cctgggccac tttgagaacc tgcagaaata caaggcggcc aagaacccca. 2640 gccccaccac ccgacctgtg agccgccggt gcgcaatcaa cgcccggaac gctttgacag ccctgttcac ctccagcggc cgcccaccct cccagcccaa cacccaggac aaaacaccca 2700 2760 gcaaggtgac ggctcgaccc tcccagcccc cactacctcg gcgctcaacc cgcctcaaaa cctgatagag ggacctccct gtccctggcc tgcctgggtc cagatctgct aatgcttttt 2820 2880 aggagtetge etggaaactt tgacatggtt catgttttta etcaaaatce aataaaacaa 2922 ggtagtttgg ctgtgcaaaa aaaaaaaaaa aaaaaaaaa aa

<210> 47

<211> 897

<212> PRT

<213> Homo sapiens

| -1 | ^ | Λ. | 4 | 7 |
|-----|-----|-----|---|-----|
| - 4 | () | 0 > | 4 | . 1 |

Met Phe Ser Gln Gln Gln Gln Leu Gln Gln Gln Gln Gln Leu 1 5 10 15

Gln Leu Gln Leu Gln Gln Leu Leu Gln Gln Ser Pro Pro Gln Ala 35 40 45

Pro Leu Pro Met Ala Val Ser Arg Gly Leu Pro Pro Gln Gln Pro Gln 50 55 60

Gln Pro Leu Leu Asn Leu Gln Gly Thr Asn Ser Ala Ser Leu Leu Asn 65 70 75 80

Gly Ser Met Leu Gln Arg Ala Leu Leu Gln Gln Leu Gln Gly Leu 85 90 95

Asp Gln Phe Ala Met Pro Pro Ala Thr Tyr Asp Thr Ala Gly Leu Thr
100 105 110

Met Pro Thr Ala Thr Leu Gly Asn Leu Arg Gly Tyr Gly Met Ala Ser 115 120 125

Pro Gly Leu Ala Ala Pro Ser Leu Thr Pro Pro Gln Leu Ala Thr Pro 130 135 140

Asn Leu Gln Gln Phe Phe Pro Gln Ala Thr Arg Gln Ser Leu Leu Gly 145 150 155 160

Pro Pro Pro Val Gly Val Pro Met Asn Pro Ser Gln Phe Asn Leu Ser 165 170 175

Gly Arg Asn Pro Gln Lys Gln Ala Arg Thr Ser Ser Ser Thr Thr Pro 180 185 190

Asn Arg Lys Asp Ser Ser Ser Gln Thr Met Pro Val Glu Asp Lys Ser 195 200 205

Asp Pro Pro Glu Gly Ser Glu Glu Ala Ala Glu Pro Arg Met Asp Thr 210 215 220

| Pro 225 | Glu | Asp | Gln | Asp | Leu 230 | Pro | Pro | Cys | Pro | Glu 235 | Asp | Ile | Ala | Lys | Glu 240 |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Lys | Arg | Thr | Pro | Ala 245 | Pro | Glu | Pro | Glu | Pro 250 | Cys | Glu | Ala | Ser | Glu 255 | Leu |
| Pro | Ala | Lys | Arg 260 | Leu | Arg | Ser | Ser | Glu 265 | Glu | Pro | Thr | Glu | Lys 270 | Glu | Pro |
| Pro | Gly | Gln 275 | Leu | Gln | Val | Lys | Ala 280 | Gln | Pro | Gln | Ala | Arg 285 | Met | Thr | Val |
| Pro | Lys 290 | Gln | Thr | Gln | Thr | Pro 295 | Asp | Leu | Leu | Pro | Glu 300 | Ala | Leu | Glu | Ala |
| Gln 305 | Val | Leu | Pro | Arg | Phe 310 | Gln | Pro | Arg | Val | Leu 315 | Gln | Val | Gln | Ala | Gln 320 |
| Val | Gln | Ser | Gln | Thr 325 | Gln | Pro | Arg | Ile | Pro 330 | Ser | Thr | Asp | Thr | Gln 335 | Val |
| Gln | Pro | Lys | Leu 340 | Gln | Lys | Gln | Ala | Gln 345 | Thr | Gln | Thr | Ser | Pro 350 | Glu | His |
| Leu | Val | Leu 355 | Gln | Gln | Lys | Gln | Val 360 | Gln | Pro | Gln | Leu | Gln 365 | Gln | Glu | Ala |
| Glu | Pro 370 | Gln | Lys | Gln | Val | Gln 375 | Pro | Gln | Val | Gln | Pro 380 | Gln | Ala | His | Ser |
| Gln 385 | Gly | Pro | Arg | Gln | Val 390 | Gln | Leu | Gln | Gln | Glu 395 | Ala | Glu | Pro | Leu | Lys 400 |
| Gln | Val | Gln | Pro | Gln 405 | Val | Gln | Pro | Gln | Ala 410 | His | Ser | Gln | Pro | Pro 415 | Arg |
| Gln | Val | Gln | Leu 420 | Gln | Leu | Gln | Lys | Gln 425 | Val | Gln | Thr | Gln | Thr 430 | Tyr | Pro |
| Gln | Val | His 435 | Thr | Gln | Ala | Gln | Pro 440 | Ser | Val | Gln | Pro | Gln 445 | Glu | His | Pro |

| Pro Ala Gln V 450 | al Ser Val | Gln Pro 455 | Pro Glu | Gln Thr 460 | His Glu | Gln Pro |
|----------------------|--------------------|----------------|----------------|----------------|----------------|----------------|
| His Thr Gln P 465 | Pro Gln Val 470 | Ser Leu | Leu Ala | Pro Glu 475 | Gln Thr | Pro Val 480 |
| Val Val His V | al Cys Gly 485 | Leu Glu | Met Pro 490 | Pro Asp | Ala Val | Glu Ala 495 |
| Gly Gly Gly M 5 | Met Glu Lys 500 | Thr Leu | Pro Glu 505 | Pro Val | Gly Thr 510 | Gln Val |
| Ser Met Glu G 515 | Glu Ile Gln | Asn Glu 520 | Ser Ala | Cys Gly | Leu Asp 525 | Val Gly |
| Glu Cys Glu A 530 | Asn Arg Ala | Arg Glu 535 | Met Pro | Gly Val 540 | Trp Gly | Ala Gly |
| Gly Ser Leu L 545 | ys Val Thr 550 | Ile Leu | Gln Ser | Ser Asp 555 | Ser Arg | Ala Phe 560 |
| Ser Thr Val P | Pro Leu Thr 565 | Pro Val | Pro Arg 570 | Pro Ser | Asp Ser | Val Ser 575 |
| Ser Thr Pro A | Ala Ala Thr 580 | Ser Thr | Pro Ser 585 | Lys Gln | Ala Leu 590 | Gln Phe |
| Phe Cys Tyr I 595 | le Cys Lys | Ala Ser 600 | Cys Ser | Ser Gln | Gln Glu 605 | Phe Gln |
| Asp His Met S 610 | Ser Glu Pro | Gln His 615 | Gln Gln | Arg Leu 620 | Gly Glu | Ile Gln |
| His Met Ser G 625 | Sln Ala Cys 630 | Leu Leu | Ser Leu | Leu Pro 635 | Val Pro | Arg Asp 640 |
| Val Leu Glu T | Chr Glu Asp 645 | Glu Glu | Pro Pro 650 | Pro Arg | Arg Trp | Cys Asn 655 |
| Thr Cys Gln L | Leu Tyr Tyr 660 | Met Gly | Asp Leu 665 | Ile Gln | His Arg 670 | Arg Thr |
| Gln Asp His L | ys Ile Ala | Lys Gln | Ser Leu | Arg Pro | Phe Cys | Thr Val |

675 680 685

| Cys | Asn | Arg | Tyr | Phe | Lys | Thr | Pro | Arg | Lys | Phe | Val | Glu | His | Val | Lys |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 690 | | | | | 695 | | | | | 700 | | | | |

- Ser Gln Gly His Lys Asp Lys Ala Lys Glu Leu Lys Ser Leu Glu Lys 705 710 715 720
- Glu Ile Ala Gly Gln Asp Glu Asp His Phe Ile Thr Val Asp Ala Val 725 730 735
- Gly Cys Phe Glu Gly Asp Glu Glu Glu Glu Glu Asp Asp Glu Asp Glu 740 745 750
- Glu Glu Ile Glu Val Glu Glu Glu Leu Cys Lys Gln Val Arg Ser Arg 755 760 765
- Asp Ile Ser Arg Glu Glu Trp Lys Gly Ser Glu Thr Tyr Ser Pro Asn 770 780
- Thr Ala Tyr Gly Val Asp Phe Leu Val Pro Val Met Gly Tyr Ile Cys 785 790 795 800
- Arg Ile Cys His Lys Phe Tyr His Ser Asn Ser Gly Ala Gln Leu Ser 805 810 815
- His Cys Lys Ser Leu Gly His Phe Glu Asn Leu Gln Lys Tyr Lys Ala 820 825 830
- Ala Lys Asn Pro Ser Pro Thr Thr Arg Pro Val Ser Arg Arg Cys Ala 835 840 845
- Ile Asn Ala Arg Asn Ala Leu Thr Ala Leu Phe Thr Ser Ser Gly Arg 850 855 860
- Pro Pro Ser Gln Pro Asn Thr Gln Asp Lys Thr Pro Ser Lys Val Thr 865 870 875 880
- Ala Arg Pro Ser Gln Pro Pro Leu Pro Arg Arg Ser Thr Arg Leu Lys 885 890 895

Thr

```
<213> Homo sapiens
<400> 48
Met Phe Ser Gln Gln Gln Gln Gln Leu Gln Gln Gln Gln Gln Gln
               5
                                   10
Leu Gln Gln Leu Gln Gln Gln Leu Gln Gln Gln Gln Leu Gln Gln
           20
                               25
Gln Gln Leu Gln Leu Gln Gln Leu Leu Gln Gln Ser Pro Pro Gln
Ala
<210> 49
<211> 215
<212> DNA
<213> Homo sapiens
<400> 49
tgggggetge ggggeeggee cateegtggg ggegaettga gegttgaggg egegegggga 60
ggcgagccac catgttcagc cagcagcagc agcagctcca gcaacagcag cagcagctcc
                                                                   120
agcagttaca gcagcagcag ctccagcagc agcaattgca gcagcagcag ttactgcagc
                                                                   180
                                                                   215
tccagcagct gctccagcag tccccaccac aggcc
<210> 50
<211> 101
<212> DNA
<213> Homo sapiens
cagcagetee ageagetaca geageageag etecageage ageaattgea geageageag
                                                                    60
ttactgcagc tccagcagct gctccagcag tccccaccac a
                                                                   101
<210>
       51
<211>
      72
<212> DNA
<213> Homo sapiens
<400> 51
```

<210> 48 <211> 49

<211> 49 <212> PRT

| ggactgg | gacc | agtttgcaat | gccaccagcc | acgtatgaca | ctgccggtct | caccatgccc | 60 |
|---------------------------|--------------------------|------------|------------|------------|------------|------------|-----|
| acagcaa | acac | tg | | | | | 72 |
| <210><211><211><212><213> | 52 15 DNA Homo | o sapiens | | | | | |
| <400> aggatto | 52 cttc | ttctc | | | | | 15 |
| <210><211><211><212><213> | 53 86 DNA Homo | o sapiens | | | | | |
| <400> ccacago | 53 gtgc | agccccaggc | acattcacag | ccccaaggc | aggtgcagct | gcagctgcag | 60 |
| aagcag | gtcc | agacacagac | atatcc | | | | 86 |
| <210><211><211><212><213> | 54 168 DNA Homo | o sapiens | | | | | |
| <400> | 54 gtac | agccacaggc | acattcacag | ggcccaaggc | aggtgcagct | gcagcaggag | 60 |
| | | | gcagccacag | • | | | 120 |
| aggcagg | gtgc | agctgcagct | gcagaagcag | gtccagacac | agacatat | | 168 |
| <210><211><211><212><213> | DNA | o sapiens | | | | | |
| <400> caggtgo | 55 cagt | cacagactca | gccgcggata | ccatccacag | acacccaggt | gcagccaaag | 60 |
| ctgcaga | aagc | aggcgcaaac | acagacctct | ccagagcact | tagtgctgca | acagaagcag | 120 |
| gtgcago | ccac | agctgcagca | ggaggcagag | ccacagaagc | aggtgcagcc | acaggtacag | 180 |
| ccacago | gcac | attcacaggg | cccaaggcag | gtgcagctgc | agcaggaggc | agagccgctg | 240 |
| aagcag | gtgc | agccacaggt | gcagccccag | gcacattcac | agcccccaag | gcaggtgcag | 300 |
| ctacaa | ctac | agaagcaggt | ccagacacag | acatat | | | 336 |

| <210><211><211><212><213> | 56 24 DNA Homo | sap: | iens | | | | | | | | | | | | |
|---------------------------|--------------------------|------------|-----------|-----------|-----------|------------|------------|-----------|-----------|-----------|------------|------------|-----------|-----------|----|
| <400> gttgag | 56 ggagg | aacto | ctgca | aa go | cag | | | | | | | | | | 24 |
| <210><211><212><213> | 57 78 DNA Homo | sap | iens | | | | | | | | | | | | |
| <400> gccaco | 57 caca | ccac | gaaga | ag at | gtgt | tttg | c cca | acgti | tcca | gtg | caggg | ggt (| ggago | cacagc | 60 |
| ccggct | | | | | | | | | | | | | | | 78 |
| <210><211><212><213> | 58 863 PRT Homo | sap: | iens | | | | | | | | | | | | |
| <400> | 58 | | | | | | | | | | | | | | |
| Met Ph 1 | ne Ser | Gln | Gln 5 | Gln | Gln | Gln | Leu | Gln 10 | Gln | Gln | Gln | Gln | Ala 15 | Pro | |
| Leu Pr | o Met | Ala 20 | Val | Ser | Arg | Gly | Leu 25 | Pro | Pro | Gln | Gln | Pro 30 | Gln | Gln | |
| Pro Le | eu Leu 35 | Asn | Leu | Gln | Gly | Thr 40 | Asn | Ser | Ala | Ser | Leu 45 | Leu | Asn | Gly | |
| Ser Me | | Gln | Arg | Ala | Leu 55 | Leu | Leu | Gln | Gln | Leu 60 | Gln | Gly | Leu | Asp | |
| Gln Ph 65 | ne Ala | Met | Pro | Pro 70 | Ala | Thr | Tyr | Asp | Thr 75 | Ala | Gly | Leu | Thr | Met 80 | |
| Pro Th | ır Ala | Thr | Leu 85 | Gly | Asn | Leu | Arg | Gly 90 | Tyr | Gly | Met | Ala | Ser 95 | Pro | |
| Gly Le | eu Ala | Ala 100 | Pro | Ser | Leu | Thr | Pro 105 | Pro | Gln | Leu | Ala | Thr 110 | Pro | Asn | |
| Leu Gl | n Gln. 115 | Phe | Phe | Pro | Gln | Ala 120 | Thr | Arg | Gln | Ser | Leu 125 | Leu | Gly | Pro | |

| Pro | Pro 130 | Val | Gly | Val | Pro | Met 135 | Asn | Pro | Ser | Gln | Phe 140 | Asn | Leu | Ser | Gly |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Arg 145 | Asn | Pro | Gln | Lys | Gln 150 | Ala | Arg | Thr | Ser | Ser 155 | Ser | Thr | Thr | Pro | Asn 160 |
| Arg | Lys | Asp | Ser | Ser 165 | Ser | Gln | Thr | Met | Pro 170 | Val | Glu | Asp | Lys | Ser 175 | Asp |
| Pro | Pro | Glu | Gly 180 | Ser | Glu | Glu | Ala | Ala 185 | Glu | Pro | Arg | Met | Asp 190 | Thr | Pro |
| Glu | Asp | Gln 195 | Asp | Leu | Pro | Pro | Cys 200 | Pro | Glu | Asp | Ile | Ala 205 | Lys | Glu | Lys |
| Arg | Thr 210 | Pro | Ala | Pro | Glu | Pro 215 | Glu | Pro | Cys | Glu | Ala 220 | Ser | Glu | Leu | Pro |
| Ala 225 | Lys | Arg | Leu | Arg | Ser 230 | Ser | Glu | Glu | Pro | Thr 235 | Glu | Lys | Glu | Pro | Pro 240 |
| Gly | Gln | Leu | Gln | Val 245 | Lys | Ala | Gln | Pro | Gln 250 | Ala | Arg | Met | Thr | Val 255 | Pro |
| Lys | Gln | Thr | Gln 260 | Thr | Pro | Asp | Leu | Leu 265 | Pro | Glu | Ala | Leu | Glu 270 | Ala | Gln |
| Val | Leu | Pro 275 | Arg | Phe | Gln | Pro | Arg 280 | Val | Leu | Gln | Val | Gln 285 | Ala | Gln | Val |
| Gln | Ser 290 | Gln | Thr | Gln | Pro | Arg 295 | Ile | Pro | Ser | Thr | Asp 300 | Thr | Gln | Val | Gln |
| Pro 305 | Lys | Leu | Gln | Lys | Gln 310 | Ala | Gln | Thr | Gln | Thr 315 | Ser | Pro | Glu | His | Leu 320 |
| Val | Leu | Gln | Gln | Lys 325 | Gln | Val | Gln | Pro | Gln 330 | Leu | Gln | Gln | Glu | Ala 335 | Glu |
| Pro | Gln | Lys | Gln 340 | Val | Gln | Pro | Gln | Val 345 | Gln | Pro | Gln | Ala | His 350 | Ser | Gln |

| Gly Pro | Arg Gln 355 | Val Gl | n Leu | Gln 360 | Gln | Glu | Ala | Glu | Pro 365 | Leu | Lys | Gln |
|------------------|----------------|---------------|--------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Val Gln 1 370 | Pro Gln | Val Gl | n Pro 375 | | Ala | His | Ser | Gln 380 | Pro | Pro | Arg | Gln |
| Val Gln 1 385 | Leu Gln | Leu Gl | _ | Gln | Val | Gln | Thr 395 | Gln | Thr | Tyr | Pro | Gln 400 |
| Val His ' | Thr Gln | Ala Gl 405 | n Pro | Ser | Val | Gln 410 | Pro | Gln | Glu | His | Pro 415 | Pro |
| Ala Gln | Val Ser 420 | Val Gl | n Pro | Pro | Glu 425 | Gln | Thr | His | Glu | Gln 430 | Pro | His |
| Thr Gln i | Pro Gln 435 | Val Se | r Leu | Leu 440 | Ala | Pro | Glu | Gln | Thr 445 | Pro | Val | Val |
| Val His V 450 | Val Cys | Gly Le | u Glu 455 | | Pro | Pro | Asp | Ala 460 | Val | Glu | Ala | Gly |
| Gly Gly I 465 | Met Glu | Lys Th | | Pro | Glu | Pro | Val 475 | Gly | Thr | Gln | Val | Ser 480 |
| Met Glu (| Glu Ile | Gln As 485 | n Glu | Ser | Ala | Cys 490 | Gly | Leu | Asp | Val | Gly 495 | Glu |
| Cys Glu Z | Asn Arg 500 | Ala Ar | g Glu | Met | Pro 505 | Gly | Val | Trp | Gly | Ala 510 | Gly | Gly |
| Ser Leu | Lys Val 515 | Thr Il | e Leu | Gln 520 | Ser | Ser | Asp | Ser | Arg 525 | Ala | Phe | Ser |
| Thr Val 1 | Pro Leu | Thr Pr | o Val 535 | | Arg | Pro | Ser | Asp 540 | Ser | Val | Ser | Ser |
| Thr Pro 2 | Ala Ala | Thr Se | | Pro | Ser | Lys | Gln 555 | Ala | Leu | Gln | Phe | Phe 560 |
| Cys Tyr | Ile Cys | Lys Al 565 | a Ser | Cys | Ser | Ser 570 | Gln | Gln | Glu | Phe | Gln 575 | Asp |

| His | Met | Ser | Glu 580 | Pro | Gln | His | Gln | Gln 585 | Arg | Leu | Gly | Glu | Ile 590 | Gln | His |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Met | Ser | Gln 595 | Ala | Leu | Leu | Ser | Leu 600 | Leu | Pro | Val | Pro | Arg 605 | Asp | Val | Leu |
| Glu | Thr 610 | Glu | Asp | Glu | Glu | Pro 615 | Pro | Pro | Arg | Arg | Trp 620 | Cys | Asn | Thr | Cys |
| Gln 625 | Leu | Tyr | Tyr | Met | Gly 630 | Asp | Leu | Ile | Gln | His 635 | Arg | Arg | Thr | Gln | Asp 640 |
| His | Lys | Ile | Ala | Lys 645 | Gln | Ser | Leu | Arg | Pro 650 | Phe | Cys | Thr | Val | Cys 655 | Asn |
| Arg | Tyr | Phe | Lys 660 | Thr | Pro | Arg | Lys | Phe 665 | Val | Glu | His | Val | Lys 670 | Ser | Gln |
| Gly | His | Lys 675 | Asp | Lys | Ala | Lys | Glu 680 | Leu | Lys | Ser | Leu | Glu 685 | Lys | Glu | Ile |
| Ala | Gly 690 | Gln | Asp | Glu | Asp | His 695 | Phe | Ile | Thr | Val | Asp 700 | Ala | Val | Gly | Cys |
| Phe 705 | Glu | Gly | Asp | Glu | Glu 710 | Glu | Glu | Glu | Asp | Asp 715 | Glu | Asp | Glu | Glu | Glu 720 |
| Ile | Glu | Val | Glu | Glu 725 | Glu | Leu | Cys | Lys | Gln 730 | Val | Arg | Ser | Arg | Asp 735 | Ile |
| Ser | Arg | Glu | Glu 740 | Trp | Lys | Gly | Ser | Glu 745 | Thr | Tyr | Ser | Pro | Asn 750 | Thr | Ala |
| Tyr | Gly | Val 755 | Asp | Phe | Leu | Val | Pro 760 | Val | Met | Gly | Tyr | Ile 765 | Cys | Arg | Ile |
| Cys | His 770 | Lys | Phe | Tyr | His | Ser 775 | Asn | Ser | Gly | Ala | Gln 780 | Leu | Ser | His | Cys |
| Lys 785 | Ser | Leu | Gly | His | Phe 790 | Glu | Asn | Leu | Gln | Lys 795 | Tyr | Lys | Ala | Ala | Lys 800 |
| Asn | Pro | Ser | Pro | Thr | Thr | Arg | Pro | Val | Ser | Arg | Arg | Cys | Ala | Ile | Asn |

805 810 815

Ala Arg Asn Ala Leu Thr Ala Leu Phe Thr Ser Ser Gly Arg Pro Pro 820 825 830

Ser Gln Pro Asn Thr Gln Asp Lys Thr Pro Ser Lys Val Thr Ala Arg 835 840 845

Pro Ser Gln Pro Pro Leu Pro Arg Arg Ser Thr Arg Leu Lys Thr 850 855 860

<210> 59

<211> 873

<212> PRT

<213> Homo sapiens

<400> 59

Met Phe Ser Gln Gln Gln Gln Gln Leu Gln Gln Gln Gln Gln Leu 1 5 10 15

Gln Leu Cln Leu Gln Gln Leu Leu Gln Gln Ser Pro Pro Gln Ala 35 40 45

Pro Leu Pro Met Ala Val Ser Arg Gly Leu Pro Pro Gln Gln Pro Gln 50 55 60

Gln Pro Leu Leu Asn Leu Gln Gly Thr Asn Ser Ala Ser Leu Leu Asn 65 70 75 80

Gly Ser Met Leu Gln Arg Ala Leu Leu Gln Gln Leu Gln Gly Asn 85 90 95

Leu Arg Gly Tyr Gly Met Ala Ser Pro Gly Leu Ala Ala Pro Ser Leu 100 105 110

Thr Pro Pro Gln Leu Ala Thr Pro Asn Leu Gln Gln Phe Pro Gln 115 120 125

Ala Thr Arg Gln Ser Leu Leu Gly Pro Pro Pro Val Gly Val Pro Met 130 135 140

| Asn Pro Se | er Gln Phe | Asn Leu 150 | Ser Gly | Arg Asn 155 | | Gln Lys | Gln | Ala 160 |
|-------------------|-------------------|----------------|----------------|----------------|---------|----------------|------------|------------|
| Arg Thr Se | er Ser Ser 165 | | Pro Asn | Arg Lys 170 | Asp | Ser Ser | Ser 175 | Gln |
| Thr Met Pi | ro Val Glu 180 | Asp Lys | Ser Asp 185 | | Glu | Gly Ser 190 | Glu | Glu |
| | lu Pro Arg 95 | Met Asp | Thr Pro 200 | Glu Asp | | Asp Leu 205 | Pro | Pro |
| Cys Pro G | lu Asp Ile | Ala Lys 215 | Glu Lys | Arg Thr | Pro 220 | Ala Pro | Glu | Pro |
| Glu Pro Cy 225 | ys Glu Ala | Ser Glu 230 | Leu Pro | Ala Lys 235 | _ | Leu Arg | Ser | Ser 240 |
| Glu Glu Pı | ro Thr Glu 245 | _ | Pro Pro | Gly Gln 250 | . Leu | Gln Val | Lys 255 | Ala |
| Gln Pro G | ln Ala Arg 260 | Met Thr | Val Pro 265 | _ | Thr | Gln Thr 270 | Pro | Asp |
| | ro Glu Ala 75 | Leu Glu | Ala Gln 280 | Val Leu | | Arg Phe 285 | Gln | Pro |
| Arg Val Le 290 | eu Gln Val | Gln Ala 295 | Gln Val | Gln Ser | 300 | Thr Gln | Pro | Arg |
| Ile Pro Se 305 | er Thr Asp | Thr Gln 310 | Val Gln | Pro Lys 315 | | Gln Lys | Gln | Ala 320 |
| Gln Thr G | ln Thr Ser 325 | Pro Glu | His Leu | Val Leu 330 | Gln | Gln Lys | Gln 335 | Val |
| Gln Pro G | ln Leu Gln 340 | Gln Glu | Ala Glu 345 | | Lys | Gln Val 350 | Gln | Pro |
| | ln Pro Gln 55 | Ala His | Ser Gln 360 | Gly Pro | | Gln Val 365 | Gln | Leu |

| Gln | Gln 370 | Glu | Ala | Glu | Pro | Leu 375 | Lys | Gln | Val | Gln | Pro 380 | Gln | Val | Gln | Pro |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Gln 385 | Ala | His | Ser | Gln | Pro 390 | Pro | Arg | Gln | Val | Gln 395 | Leu | Gln | Leu | Gln | Lys 400 |
| Gln | Val | Gln | Thr | Gln 405 | Thr | Tyr | Pro | Gln | Val 410 | His | Thr | Gln | Ala | Gln 415 | Pro |
| Ser | Val | Gln | Pro 420 | Gln | Glu | His | Pro | Pro 425 | Ala | Gln | Val | Ser | Val 430 | Gln | Pro |
| Pro | Glu | Gln 435 | Thr | His | Glu | Gln | Pro 440 | His | Thr | Gln | Pro | Gln 445 | Val | Ser | Leu |
| Leu | Ala 450 | Pro | Glu | Gln | Thr | Pro 455 | Val | Val | Val | His | Val 460 | Cys | Gly | Leu | Glu |
| Met 465 | Pro | Pro | Asp | Ala | Val 470 | Glu | Ala | Gly | Gly | Gly 475 | Met | Glu | Lys | Thr | Leu 480 |
| Pro | Glu | Pro | Val | Gly 485 | Thr | Gln | Val | Ser | Met 490 | Glu | Glu | Ile | Gln | Asn 495 | Glu |
| Ser | Ala | Cys | Gly 500 | Leu | Asp | Val | Gly | Glu 505 | Cys | Glu | Asn | Arg | Ala 510 | Arg | Glu |
| Met | Pro | Gly 515 | Val | Trp | Gly | Ala | Gly 520 | Gly | Ser | Leu | Lys | Val 525 | Thr | Ile | Leu |
| Gln | Ser 530 | Ser | Asp | Ser | Arg | Ala 535 | Phe | Ser | Thr | Val | Pro 540 | Leu | Thr | Pro | Val |
| Pro 545 | Arg | Pro | Ser | Asp | Ser 550 | Val | Ser | Ser | Thr | Pro 555 | Ala | Ala | Thr | Ser | Thr 560 |
| Pro | Ser | Lys | Gln | Ala 565 | Leu | Gln | Phe | Phe | Cys 570 | Tyr | Ile | Cys | Lys | Ala 575 | Ser |
| Cys | Ser | Ser | Gln 580 | Gln | Glu | Phe | Gln | Asp 585 | His | Met | Ser | Glu | Pro 590 | Gln | His |
| Gln | Gln | Arg | Leu | Gly | Glu | Ile | Gln | His | Met | Ser | Gln | Ala | Cys | Leu | Leu |

| Ser | Leu 610 | Leu | Pro | Val | Pro | Arg 615 | Asp | Val | Leu | Glu | Thr 620 | Glu | Asp | Glu | Glu |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Pro 625 | Pro | Pro | Arg | Arg | Trp 630 | Cys | Asn | Thr | Cys | Gln 635 | Leu | Tyr | Tyr | Met | Gly 640 |
| Asp | Leu | Ile | Gln | His 645 | Arg | Arg | Thr | Gln | Asp 650 | His | Lys | Ile | Ala | Lys 655 | Gln |
| Ser | Leu | Arg | Pro 660 | Phe | Cys | Thr | Val | Cys 665 | Asn | Arg | Tyr | Phe | Lys 670 | Thr | Pro |
| Arg | Lys | Phe 675 | Val | Glu | His | Val | Lys 680 | Ser | Gln | Gly | His | Lys 685 | Asp | Lys | Ala |
| Lys | Glu 690 | Leu | Lys | Ser | Leu | Glu 695 | Lys | Glu | Ile | Ala | Gly 700 | Gln | Asp | Glu | Asp |
| His 705 | Phe | Ile | Thr | Val | Asp 710 | Ala | Val | Gly | Cys | Phe 715 | Glu | Gly | Asp | Glu | Glu 720 |
| Glu | Glu | Glu | Asp | Asp 725 | Glu | Asp | Glu | Glu | Glu 730 | Ile | Glu | Val | Glu | Glu 735 | Glu |
| Leu | . Cys | Lys | Gln 740 | Val | Arg | Ser | Arg | Asp 745 | Ile | Ser | Arg | Glu | Glu 750 | Trp | Lys |
| Gly | Ser | Glu 755 | Thr | Tyr | Ser | Pro | Asn 760 | Thr | Ala | Tyr | Gly | Val 765 | Asp | Phe | Leu |
| Val | Pro 770 | Val | Met | Gly | Tyr | Ile 775 | Суз | Arg | Ile | Cys | His 780 | Lys | Phe | Tyr | His |
| Ser 785 | Asn | Ser | Gly | Ala | Gln 790 | Leu | Ser | His | Cys | Lys 795 | Ser | Leu | Gly | His | Phe 800 |
| Glu | . Asn | Leu | Gln | Lys 805 | Tyr | Lys | Ala | Ala | Lys 810 | Asn | Pro | Ser | Pro | Thr 815 | Thr |
| Arg | Pro | Val | Ser | Arg | Arg | Cys | Ala | Ile | Asn | Ala | Arg | Asn | Ala | Leu | Thr |

Ala Leu Phe Thr Ser Ser Gly Arg Pro Pro Ser Gln Pro Asn Thr Gln 835 840 845

Asp Lys Thr Pro Ser Lys Val Thr Ala Arg Pro Ser Gln Pro Pro Leu 850 855 860

Pro Arg Arg Ser Thr Arg Leu Lys Thr 865 870

<210> 60

<211> 892

<212> PRT

<213> Homo sapiens

<400> 60

Gln Leu Cln Leu Gln Gln Leu Leu Gln Gln Ser Pro Pro Gln Ala 35 40 45

Pro Leu Pro Met Ala Val Ser Arg Gly Leu Pro Pro Gln Gln Pro Gln 50 55 60

Gln Pro Leu Leu Asn Leu Gln Gly Thr Asn Ser Ala Ser Leu Leu Asn 65 70 75 80

Gly Ser Met Leu Gln Arg Ala Leu Leu Gln Gln Leu Gln Gly Leu 85 90 95

Asp Gln Phe Ala Met Pro Pro Ala Thr Tyr Asp Thr Ala Gly Leu Thr 100 105 110

Met Pro Thr Ala Thr Leu Gly Asn Leu Arg Gly Tyr Gly Met Ala Ser 115 120 125

Pro Gly Leu Ala Ala Pro Ser Leu Thr Pro Pro Gln Leu Ala Thr Pro 130 135 140

| Asn 145 | Leu | Gln | Gln | Phe | Phe 150 | Pro | Gln | Ala | Thr | Arg 155 | Gln | Ser | Leu | Leu | Gly 160 |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Pro | Pro | Pro | Val | Gly 165 | Val | Pro | Met | Asn | Pro 170 | Ser | Gln | Phe | Asn | Leu 175 | Ser |
| Gly | Arg | Asn | Pro 180 | Gln | Lys | Gln | Ala | Arg 185 | Thr | Ser | Ser | Ser | Thr 190 | Thr | Pro |
| Asn | Arg | Lys 195 | Thr | Met | Pro | Val | Glu 200 | Asp | Lys | Ser | Asp | Pro 205 | Pro | Glu | Gly |
| Ser | Glu 210 | Glu | Ala | Ala | Glu | Pro 215 | Arg | Met | Asp | Thr | Pro 220 | Glu | Asp | Gln | Asp |
| Leu 225 | Pro | Pro | Cys | Pro | Glu 230 | Asp | Ile | Ala | Lys | Glu 235 | Lys | Arg | Thr | Pro | Ala 240 |
| Pro | Glu | Pro | Glu | Pro 245 | Cys | Glu | Ala | Ser | Glu 250 | Leu | Pro | Ala | Lys | Arg 255 | Leu |
| Arg | Ser | Ser | Glu 260 | Glu | Pro | Thr | Glu | Lys 265 | Glu | Pro | Pro | Gly | Gln 270 | Leu | Gln |
| Val | Lys | Ala 275 | Gln | Pro | Gln | Ala | Arg 280 | Met | Thr | Val | Pro | Lys 285 | Gln | Thr | Gln |
| Thr | Pro 290 | Asp | Leu | Leu | Pro | Glu 295 | Ala | Leu | Glu | Ala | Gln 300 | Val | Leu | Pro | Arg |
| Phe 305 | Gln | Pro | Arg | Val | Leu 310 | Gln | Val | Gln | Ala | Gln 315 | Val | Gln | Ser | Gln | Thr 320 |
| Gln | Pro | Arg | Ile | Pro 325 | Ser | Thr | Asp | Thr | Gln 330 | Val | Gln | Pro | Lys | Leu 335 | Gln |
| Lys | Gln | Ala | Gln 340 | Thr | Gln | Thr | Ser | Pro 345 | Glu | His | Leu | Val | Leu 350 | Gln | Gln |
| Lys | Gln | Val 355 | Gln | Pro | Gln | Leu | Gln 360 | Gln | Glu | Ala | Glu | Pro 365 | Gln | Lys | Gln |
| Val | Gln | Pro | Gln | Val | Gln | Pro | Gln | Ala | His | Ser | Gln | Gly | Pro | Arg | Gln |

| Val 385 | Gln | Leu | Gln | Gln | Glu 390 | Ala | Glu | Pro | Leu | Lys 395 | GIn | Val | Gln | Pro | G11 400 |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Val | Gln | Pro | Gln | Ala 405 | His | Ser | Gln | Pro | Pro 410 | Arg | Gln | Val | Gln | Leu 415 | Gln |
| Leu | Gln | Lys | Gln 420 | Val | Gln | Thr | Gln | Thr 425 | Tyr | Pro | Gln | Val | His 430 | Thr | Glr |
| Ala | Gln | Pro 435 | Ser | Val | Gln | Pro | Gln 440 | Glu | His | Pro | Pro | Ala 445 | Gln | Val | Ser |
| Val | Gln 450 | Pro | Pro | Glu | Gln | Thr 455 | His | Glu | Gln | Pro | His 460 | Thr | Gln | Pro | Glr |
| Val 465 | Ser | Leu | Leu | Ala | Pro 470 | Glu | Gln | Thr | Pro | Val 475 | Val | Val | His | Val | Cys 480 |
| Gly | Leu | Glu | Met | Pro 485 | Pro | Asp | Ala | Val | Glu 490 | Ala | Gly | Gly | Gly | Met 495 | Glu |
| Lys | Thr | Leu | Pro 500 | Glu | Pro | Val | Gly | Thr 505 | Gln | Val | Ser | Met | Glu 510 | Glu | Ile |
| Gln | Asn | Glu 515 | Ser | Ala | Cys | Gly | Leu 520 | Asp | Val | Gly | Glu | Cys 525 | Glu | Asn | Arg |
| Ala | Arg 530 | Glu | Met | Pro | Gly | Val 535 | Trp | Gly | Ala | Gly | Gly 540 | Ser | Leu | Lys | Val |
| Thr 545 | Ile | Leu | Gln | Ser | Ser 550 | Asp | Ser | Arg | Ala | Phe 555 | Ser | Thr | Val | Pro | Leu 560 |
| Thr | Pro | Val | Pro | Arg 565 | Pro | Ser | Asp | Ser | Val 570 | Ser | Ser | Thr | Pro | Ala 575 | Ala |
| Thr | Ser | Thr | Pro 580 | Ser | Lys | Gln | Ala | Leu 585 | Gln | Phe | Phe | Cys | Tyr 590 | Ile | Cys |
| Lys | Ala | Ser 595 | Cys | Ser | Ser | Gln | Gln 600 | Glu | Phe | Gln | Asp | His 605 | Met | Ser | Glu |

| Pro | Gln 610 | His | Gln | Gln | Arg | Leu 615 | Gly | Glu | Ile | Gln | His 620 | Met | Ser | Gln | Ala |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Cys 625 | Leu | Leu | Ser | Leu | Leu 630 | Pro | Val | Pro | Arg | Asp 635 | Val | Leu | Glu | Thr | Glu 640 |
| Asp | Glu | Glu | Pro | Pro 645 | Pro | Arg | Arg | Trp | Cys 650 | Asn | Thr | Cys | Gln | Leu 655 | Tyr |
| Tyr | Met | Gly | Asp 660 | Leu | Ile | Gln | His | Arg 665 | Arg | Thr | Gln | Asp | His 670 | Lys | Ile |
| Ala | Lys | Gln 675 | Ser | Leu | Arg | Pro | Phe 680 | Cys | Thr | Val | Cys | Asn 685 | Arg | Tyr | Phe |
| Lys | Thr 690 | Pro | Arg | Lys | Phe | Val 695 | Glu | His | Val | Lys | Ser 700 | Gln | Gly | His | Lys |
| Asp 705 | Lys | Ala | Lys | Glu | Leu 710 | Lys | Ser | Leu | Glu | Lys 715 | Glu | Ile | Ala | Gly | Gln 720 |
| Asp | Glu | Asp | His | Phe 725 | Ile | Thr | Val | Asp | Ala 730 | Val | Gly | Cys | Phe | Glu 735 | Gly |
| Asp | Glu | Glu | Glu 740 | Glu | Glu | Asp | Asp | Glu 745 | Asp | Glu | Glu | Glu | Ile 750 | Glu | Val |
| Glu | Glu | Glu 755 | Leu | Cys | Lys | Gln | Val 760 | Arg | Ser | Arg | Asp | Ile 765 | Ser | Arg | Glu |
| Glu | Trp 770 | Lys | Gly | Ser | Glu | Thr 775 | Tyr | Ser | Pro | Asn | Thr 780 | Ala | Tyr | Gly | Val |
| Asp 785 | Phe | Leu | Val | Pro | Val 790 | Met | Gly | Tyr | Ile | Cys 795 | Arg | Ile | Cys | His | Lys 800 |
| Phe | Tyr | His | Ser | Asn 805 | Ser | Gly | Ala | Gln | Leu 810 | Ser | His | Cys | Lys | Ser 815 | Leu |
| Gly | His | Phe | Glu 820 | Asn | Leu | Gln | Lys | Tyr 825 | Lys | Ala | Ala | Lys | Asn 830 | Pro | Ser |

Pro Thr Thr Arg Pro Val Ser Arg Arg Cys Ala Ile Asn Ala Arg Asn 835 840 845

Ala Leu Thr Ala Leu Phe Thr Ser Ser Gly Arg Pro Pro Ser Gln Pro 850 855 860

Asn Thr Gln Asp Lys Thr Pro Ser Lys Val Thr Ala Arg Pro Ser Gln 865 870 875 888

Pro Pro Leu Pro Arg Arg Ser Thr Arg Leu Lys Thr 885 890

<210> 61

<211> 868

<212> PRT

<213> Homo sapiens

<400> 61

Met Phe Ser Gln Gln Gln Gln Leu Gln Gln Gln Gln Gln Leu 1 5 10 15

Gln Leu Gln Leu Gln Gln Leu Leu Gln Gln Ser Pro Pro Gln Ala 35 40 45

Pro Leu Pro Met Ala Val Ser Arg Gly Leu Pro Pro Gln Gln Pro Gln 50 55 60

Gln Pro Leu Leu Asn Leu Gln Gly Thr Asn Ser Ala Ser Leu Leu Asn 65 70 75 80

Gly Ser Met Leu Gln Arg Ala Leu Leu Gln Gln Leu Gln Gly Leu 85 90 95

Asp Gln Phe Ala Met Pro Pro Ala Thr Tyr Asp Thr Ala Gly Leu Thr
100 105 110

Met Pro Thr Ala Thr Leu Gly Asn Leu Arg Gly Tyr Gly Met Ala Ser 115 120 125

Pro Gly Leu Ala Ala Pro Ser Leu Thr Pro Pro Gln Leu Ala Thr Pro

| Asn 145 | Leu | Gln | Gln | Phe | Phe 150 | Pro | Gln | Ala | Thr | Arg 155 | Gln | Ser | Leu | Leu | Gly 160 |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Pro | Pro | Pro | Val | Gly 165 | Val | Pro | Met | Asn | Pro 170 | Ser | Gln | Phe | Asn | Leu 175 | Ser |
| Gly | Arg | Asn | Pro 180 | Gln | Lys | Gln | Ala | Arg 185 | Thr | Ser | Ser | Ser | Thr 190 | Thr | Pro |
| Asn | Arg | Lys 195 | Asp | Ser | Ser | Ser | Gln 200 | Thr | Met | Pro | Val | Glu 205 | Asp | Lys | Ser |
| Asp | Pro 210 | Pro | Glu | Gly | Ser | Glu 215 | Glu | Ala | Ala | Glu | Pro 220 | Arg | Met | Asp | Thr |
| Pro 225 | Glu | Asp | Gln | Asp | Leu 230 | Pro | Pro | Cys | Pro | Glu 235 | Asp | Ile | Ala | Lys | Glu 240 |
| Lys | Arg | Thr | Pro | Ala 245 | Pro | Glu | Pro | Glu | Pro 250 | Cys | Glu | Ala | Ser | Glu 255 | Leu |
| Pro | Ala | Lys | Arg 260 | Leu | Arg | Ser | Ser | Glu 265 | Glu | Pro | Thr | Glu | Lys 270 | Glu | Pro |
| Pro | Gly | Gln 275 | Leu | Gln | Val | Lys | Ala 280 | Gln | Pro | Gln | Ala | Arg 285 | Met | Thr | Val |
| Pro | Lys 290 | Gln | Thr | Gln | Thr | Pro 295 | Asp | Leu | Leu | Pro | Glu 300 | Ala | Leu | Glu | Ala |
| Gln 305 | Val | Leu | Pro | Arg | Phe 310 | Gln | Pro | Arg | Val | Leu 315 | Gln | Val | Gln | Ala | Gln 320 |
| Val | Gln | Ser | Gln | Thr 325 | Gln | Pro | Arg | Ile | Pro 330 | Ser | Thr | Asp | Thr | Gln 335 | Val |
| Gln | Pro | Lys | Leu 340 | Gln | Lys | Gln | Ala | Gln 345 | Thr | Gln | Thr | Ser | Pro 350 | Glu | His |
| Leu | Val | Leu | Gln | Gln | Lys | Gln | Val | Gln | Pro | Gln | Leu | Gln | Gln | Glu | Ala |

| Glu | Pro 370 | Gln | Lys | Gln | Val | Gln 375 | Pro | Gln | Val | Gln | Pro 380 | Gln | Ala | His | Ser |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Gln 385 | Gly | Pro | Arg | Gln | Val 390 | Gln | Leu | Gln | Gln | Glu 395 | Ala | Glu | Pro | Leu | Lys 400 |
| Gln | Val | Gln | Gln | Val 405 | His | Thr | Gln | Ala | Gln 410 | Pro | Ser | Val | Ġln | Pro 415 | Gln |
| Glu | His | Pro | Pro 420 | Ala | Gln | Val | Ser | Val 425 | Gln | Pro | Pro | Glu | Gln 430 | Thr | His |
| Glu | Gln | Pro 435 | His | Thr | Gln | Pro | Gln 440 | Val | Ser | Leu | Leu | Ala 445 | Pro | Glu | Gln |
| Thr | Pro 450 | Val | Val | Val | His | Val 455 | Cys | Gly | Leu | Glu | Met 460 | Pro | Pro | Asp | Ala |
| Val 465 | Glu | Ala | Gly | Gly | Gly 470 | Met | Glu | Lys | Thr | Leu 475 | Pro | Glu | Pro | Val | Gly 480 |
| Thr | Gln | Val | Ser | Met 485 | Glu | Glu | Ile | Gln | Asn 490 | Glu | Ser | Ala | Cys | Gly 495 | Leu |
| Asp | Val | Gly | Glu 500 | Cys | Glu | Asn | Arg | Ala 505 | Arg | Glu | Met | Pro | Gly 510 | Val | Trp |
| Gly | Ala | Gly 515 | Gly | Ser | Leu | Lys | Val 520 | Thr | Ile | Leu | Gln | Ser 525 | Ser | Asp | Ser |
| Arg | Ala 530 | Phe | Ser | Thr | Val | Pro 535 | Leu | Thr | Pro | Val | Pro 540 | Arg | Pro | Ser | Asp |
| Ser 545 | Val | Ser | Ser | Thr | Pro 550 | Ala | Ala | Thr | Ser | Thr 555 | Pro | Ser | Lys | Gln | Ala 560 |
| Leu | Gln | Phe | Phe | Cys 565 | Tyr | Ile | Cys | Lys | Ala 570 | Ser | Cys | Ser | Ser | Gln 575 | Gln |
| Glu | Phe | Gln | Asp 580 | His | Met | Ser | Glu | Pro 585 | Gln | His | Gln | Gln | Arg 590 | Leu | Gly |

| Glu | IIe | 595 | His | Met | Ser | GIn | 600 | Cys | Leu | Leu | ser | Leu 605 | Leu | Pro | vai |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Pro | Arg 610 | Asp | Val | Leu | Glu | Thr 615 | Glu | Asp | Glu | Glu | Pro 620 | Pro | Pro | Arg | Arg |
| Trp 625 | Cys | Asn | Thr | Cys | Gln 630 | Leu | Tyr | Tyr | Met | Gly 635 | Asp | Leu | Ile | Gln | His 640 |
| Arg | Arg | Thr | Gln | Asp 645 | His | Lys | Ile | Ala | Lys 650 | Gln | Ser | Leu | Arg | Pro 655 | Phe |
| Cys | Thr | Val | Cys 660 | Asn | Arg | Tyr | Phe | Lys 665 | Thr | Pro | Arg | Lys | Phe 670 | Val | Glu |
| His | Val | Lys 675 | Ser | Gln | Gly | His | Lys 680 | Asp | Lys | Ala | Lys | Glu 685 | Leu | Lys | Ser |
| Leu | Glu 690 | Lys | Glu | Ile | Ala | Gly 695 | Gln | Asp | Glu | Asp | His 700 | Phe | Ile | Thr | Val |
| Asp 705 | Ala | Val | Gly | Cys | Phe 710 | Glu | Gly | Asp | Glu | Glu 715 | Glu | Glu | Glu | Asp | Asp 720 |
| Glu | Asp | Glu | Glu | Glu 725 | Ile | Glu | Val | Glu | Glu 730 | Glu | Leu | Cys | Lys | Gln 735 | Val |
| Arg | Ser | Arg | Asp 740 | Ile | Ser | Arg | Glu | Glu 745 | Trp | Lys | Gly | Ser | Glu 750 | Thr | Tyr |
| Ser | Pro | Asn 755 | Thr | Ala | Tyr | Gly | Val 760 | Asp | Phe | Leu | Val | Pro 765 | Val | Met | Gly |
| Tyr | Ile 770 | Cys | Arg | Ile | Cys | His 775 | Lys | Phe | Tyr | His | Ser 780 | Asn | Ser | Gly | Ala |
| Gln 785 | Leu | Ser | His | Cys | Lys 790 | Ser | Leu | Gly | His | Phe 795 | Glu | Asn | Leu | Gln | Lys 800 |
| Tyr | Lys | Ala | Ala | Lys 805 | Asn | Pro | Ser | Pro | Thr 810 | Thr | Arg | Pro | Val | Ser 815 | Arg |

Arg Cys Ala Ile Asn Ala Arg Asn Ala Leu Thr Ala Leu Phe Thr Ser 820 825 Ser Gly Arg Pro Pro Ser Gln Pro Asn Thr Gln Asp Lys Thr Pro Ser Lys Val Thr Ala Arg Pro Ser Gln Pro Pro Leu Pro Arg Arg Ser Thr 855 Arg Leu Lys Thr 865 <210> 62 <211> 841 <212> PRT <213> Homo sapiens <400> 62 Met Phe Ser Gln Gln Gln Gln Leu Gln Gln Gln Gln Gln Gln Leu 10 20 25 Gln Leu Leu Gln Leu Gln Leu Leu Gln Gln Ser Pro Pro Gln Ala Pro Leu Pro Met Ala Val Ser Arg Gly Leu Pro Pro Gln Gln Pro Gln 50 55 Gln Pro Leu Leu Asn Leu Gln Gly Thr Asn Ser Ala Ser Leu Leu Asn 65 70 75 80 Gly Ser Met Leu Gln Arg Ala Leu Leu Gln Gln Leu Gln Gly Leu 90 95 85 Asp Gln Phe Ala Met Pro Pro Ala Thr Tyr Asp Thr Ala Gly Leu Thr 100 105 Met Pro Thr Ala Thr Leu Gly Asn Leu Arg Gly Tyr Gly Met Ala Ser 120

140

Pro Gly Leu Ala Ala Pro Ser Leu Thr Pro Pro Gln Leu Ala Thr Pro

135

130

| Asn 145 | Leu | Gln | Gln | Phe | Phe 150 | Pro | Gln | Ala | Thr | Arg 155 | Gln | Ser | Leu | Leu | Gly 160 |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Pro | Pro | Pro | Val | Gly 165 | Val | Pro | Met | Asn | Pro 170 | Ser | Gln | Phe | Asn | Leu 175 | Ser |
| Gly | Arg | Asn | Pro 180 | Gln | Lys | Gln | Ala | Arg 185 | Thr | Ser | Ser | Ser | Thr 190 | Thr | Pro |
| Asn | Arg | Lys 195 | Asp | Ser | Ser | Ser | Gln 200 | Thr | Met | Pro | Val | Glu 205 | Asp | Lys | Ser |
| Asp | Pro 210 | Pro | Glu | Gly | Ser | Glu 215 | Glu | Ala | Ala | Glu | Pro 220 | Arg | Met | Asp | Thr |
| Pro 225 | Glu | Asp | Gln | Asp | Leu 230 | Pro | Pro | Cys | Pro | Glu 235 | Asp | Ile | Ala | Lys | Glu 240 |
| Lys | Arg | Thr | Pro | Ala 245 | Pro | Glu | Pro | Glu | Pro 250 | Cys | Glu | Ala | Ser | Glu 255 | Leu |
| Pro | Ala | Lys | Arg 260 | Leu | Arg | Ser | Ser | Glu 265 | Glu | Pro | Thr | Glu | Lys 270 | Glu | Pro |
| Pro | Gly | Gln 275 | Leu | Gln | Val | Lys | Ala 280 | Gln | Pro | Gln | Ala | Arg 285 | Met | Thr | Val |
| Pro | Lys 290 | Gln | Thr | Gln | Thr | Pro 295 | Asp | Leu | Leu | Pro | Glu 300 | Ala | Leu | Glu | Ala |
| Gln 305 | Val | Leu | Pro | Arg | Phe 310 | Gln | Pro | Arg | Val | Leu 315 | Gln | Val | Gln | Ala | Gln 320 |
| Val | Gln | Ser | Gln | Thr 325 | Gln | Pro | Arg | Ile | Pro 330 | Ser | Thr | Asp | Thr | Gln 335 | Val |
| Gln | Pro | Lys | Leu 340 | Gln | Lys | Gln | Ala | Gln 345 | Thr | Gln | Thr | Ser | Pro 350 | Glu | His |
| Leu | Val | Leu 355 | Gln | Gln | Lys | Gln | Val 360 | Gln | Pro | Gln | Leu | Gln 365 | Gln | Glu | Ala |

| Glu | Pro 370 | Gln | Lys | Gln | Val | Gln 375 | Pro | Gln | Val | His | Thr 380 | Gln | Ala | Gln | Pro |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Ser 385 | Val | Gln | Pro | Gln | Glu 390 | His | Pro | Pro | Ala | Gln 395 | Val | Ser | Val | Gln | Pro 400 |
| Pro | Glu | Gln | Thr | His 405 | Glu | Gln | Pro | His | Thr 410 | Gln | Pro | Gln | Val | Ser 415 | Leu |
| Leu | Ala | Pro | Glu 420 | Gln | Thr | Pro | Val | Val 425 | Val | His | Val | Cys | Gly 430 | Leu | Glu |
| Met | Pro | Pro 435 | Asp | Ala | Val | Glu | Ala 440 | Gly | Gly | Gly | Met | Glu 445 | Lys | Thr | Leu |
| Pro | Glu 450 | Pro | Val | Gly | Thr | Gln 455 | Val | Ser | Met | Glu | Glu 460 | Ile | Gln | Asn | Glu |
| Ser 465 | Ala | Cys | Gly | Leu | Asp 470 | Val | Gly | Glu | Cys | Glu 475 | Asn | Arg | Ala | Arg | Glu 480 |
| Met | Pro | Gly | Val | Trp 485 | Gly | Ala | Gly | Gly | Ser 490 | Leu | Lys | Val | Thr | Ile 495 | Leu |
| Gln | Ser | Ser | Asp 500 | Ser | Arg | Ala | Phe | Ser 505 | Thr | Val | Pro | Leu | Thr 510 | Pro | Val |
| Pro | Arg | Pro 515 | Ser | Asp | Ser | Val | Ser 520 | Ser | Thr | Pro | Ala | Ala 525 | Thr | Ser | Thr |
| Pro | Ser 530 | Lys | Gln | Ala | Leu | Gln 535 | Phe | Phe | Cys | Tyr | Ile 540 | Cys | Lys | Ala | Ser |
| Cys 545 | Ser | Ser | Gln | Gln | Glu 550 | Phe | Gln | Asp | His | Met 555 | Ser | Glu | Pro | Gln | His 560 |
| Gln | Gln | Arg | Leu | Gly 565 | Glu | Ile | Gln | His | Met 570 | Ser | Gln | Ala | Cys | Leu 575 | Leu |
| Ser | Leu | Leu | Pro 580 | Val | Pro | Arg | Asp | Val 585 | Leu | Glu | Thr | Glu | Asp 590 | Glu | Glu |

| PIO | PIO | 595 | Arg | Arg | Trp | Cys | 600 | IIII | Cys | GIII | пей | 605 | ıyı | Mec | GIY |
|------------|------------|------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Asp | Leu 610 | Ile | Gln | His | Arg | Arg 615 | Thr | Gln | Asp | His | Lys 620 | Ile | Ala | Lys | Gln |
| Ser 625 | Leu | Arg | Pro | Phe | Cys 630 | Thr | Val | Cys | Asn | Arg 635 | Tyr | Phe | Lys | Thr | Pro 640 |
| Arg | Lys | Phe | Val | Glu 645 | His | Val | Lys | Ser | Gln 650 | Gly | His | Lys | Asp | Lys 655 | Ala |
| Lys | Glu | Leu | Lys 660 | Ser | Leu | Glu | Lys | Glu 665 | Ile | Ala | Gly | Gln | Asp 670 | Glu | Asp |
| His | Phe | Ile 675 | Thr | Val | Asp | Ala | Val 680 | Gly | Cys | Phe | Glu | Gly 685 | Asp | Glu | Glu |
| Glu | Glu 690 | Glu | Asp | Asp | Glu | Asp 695 | Glu | Glu | Glu | Ile | Glu 700 | Val | Glu | Glu | Glu |
| Leu 705 | Cys | Lys | Gln | Val | Arg 710 | Ser | Arg | Asp | Ile | Ser 715 | Arg | Glu | Glu | Trp | Lys 720 |
| Gly | Ser | Glu | Thr | Tyr 725 | Ser | Pro | Asn | Thr | Ala 730 | Tyr | Gly | Val | Asp | Phe 735 | Leu |
| Val | Pro | Val | Met 740 | Gly | Tyr | Ile | Cys | Arg 745 | Ile | Cys | His | Lys | Phe 750 | Tyr | His |
| Ser | Asn | Ser 755 | Gly | Ala | Gln | Leu | Ser 760 | His | Cys | Lys | Ser | Leu 765 | Gly | His | Phe |
| Glu | Asn 770 | Leu | Gln | Lys | Tyr | Lys 775 | Ala | Ala | Lys | Asn | Pro 780 | Ser | Pro | Thr | Thr |
| Arg 785 | Pro | Val | Ser | Arg | Arg 790 | Cys | Ala | Ile | Asn | Ala 795 | Arg | Asn | Ala | Leu | Thr 800 |
| Ala | Leu | Phe | Thr | Ser 805 | Ser | Gly | Arg | Pro | Pro 810 | Ser | Gln | Pro | Asn | Thr 815 | Gln |
| Asp | Lys | Thr | ${\tt Pro}$ | Ser | Lys | Val | Thr | Ala | Arg | Pro | Ser | Gln | Pro | Pro | Leu |

820 825 830

Pro Arg Arg Ser Thr Arg Leu Lys Thr 835 840

<210> 63

<211> 785

<212> PRT

<213> Homo sapiens

<400> 63

Met Phe Ser Gln Gln Gln Gln Leu Gln Gln Gln Gln Gln Leu 1 5 10 15

Gln Leu Gln Leu Gln Gln Leu Leu Gln Gln Ser Pro Pro Gln Ala 35 40 45

Pro Leu Pro Met Ala Val Ser Arg Gly Leu Pro Pro Gln Gln Pro Gln 50 55 60

Gln Pro Leu Leu Asn Leu Gln Gly Thr Asn Ser Ala Ser Leu Leu Asn 65 70 75 80

Gly Ser Met Leu Gln Arg Ala Leu Leu Leu Gln Gln Leu Gln Gly Leu 85 90 95

Asp Gln Phe Ala Met Pro Pro Ala Thr Tyr Asp Thr Ala Gly Leu Thr
100 105 110

Met Pro Thr Ala Thr Leu Gly Asn Leu Arg Gly Tyr Gly Met Ala Ser 115 120 125

Pro Gly Leu Ala Ala Pro Ser Leu Thr Pro Pro Gln Leu Ala Thr Pro 130 135 140

Asn Leu Gln Gln Phe Phe Pro Gln Ala Thr Arg Gln Ser Leu Leu Gly 145 150 155 160

Pro Pro Pro Val Gly Val Pro Met Asn Pro Ser Gln Phe Asn Leu Ser 165 170 175

| Gly | Arg | Asn | Pro 180 | Gln | Lys | Gln | Ala | Arg 185 | Thr | Ser | Ser | Ser | Thr 190 | Thr | Pro |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Asn | Arg | Lys 195 | Asp | Ser | Ser | Ser | Gln 200 | Thr | Met | Pro | Val | Glu 205 | Asp | Lys | Ser |
| Asp | Pro 210 | Pro | Glu | Gly | Ser | Glu 215 | Glu | Ala | Ala | Glu | Pro 220 | Arg | Met | Asp | Thr |
| Pro 225 | Glu | Asp | Gln | Asp | Leu 230 | Pro | Pro | Cys | Pro | Glu 235 | Asp | Ile | Ala | Lys | Glu 240 |
| Lys | Arg | Thr | Pro | Ala 245 | Pro | Glu | Pro | Glu | Pro 250 | Cys | Glu | Ala | Ser | Glu 255 | Leu |
| Pro | Ala | Lys | Arg 260 | Leu | Arg | Ser | Ser | Glu 265 | Glu | Pro | Thr | Glu | Lys 270 | Glu | Pro |
| Pro | Gly | Gln 275 | Leu | Gln | Val | Lys | Ala 280 | Gln | Pro | Gln | Ala | Arg 285 | Met | Thr | Val |
| Pro | Lys 290 | Gln | Thr | Gln | Thr | Pro 295 | Asp | Leu | Leu | Pro | Glu 300 | Ala | Leu | Glu | Ala |
| Gln 305 | Val | Leu | Pro | Arg | Phe 310 | Gln | Pro | Arg | Val | Leu 315 | Gln | Val | Gln | Ala | Pro 320 |
| Gln | Val | His | Thr | Gln 325 | Ala | Gln | Pro | Ser | Val 330 | Gln | Pro | Gln | Glu | His 335 | Pro |
| Pro | Ala | Gln | Val 340 | Ser | Val | Gln | Pro | Pro 345 | Glu | Gln | Thr | His | Glu 350 | Gln | Pro |
| His | Thr | Gln 355 | Pro | Gln | Val | Ser | Leu 360 | Leu | Ala | Pro | Glu | Gln 365 | Thr | Pro | Val |
| Val | Val 370 | His | Val | Cys | Gly | Leu 375 | Glu | Met | Pro | Pro | Asp 380 | Ala | Val | Glu | Ala |
| Gly 385 | Gly | Gly | Met | Glu | Lys 390 | Thr | Leu | Pro | Glu | Pro 395 | Val | Gly | Thr | Gln | Val 400 |

| Ser Met Glu | Glu Ile 405 | | ı Glu | Ser | Ala 410 | Cys | Gly | Leu | Asp | Val 415 | Gly |
|--------------------|----------------|----------------|--------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Glu Cys Glu | Asn Arg 420 | Ala Arg | g Glu | Met 425 | Pro | Gly | Val | Trp | Gly 430 | Ala | Gly |
| Gly Ser Leu 435 | Lys Val | Thr Ile | e Leu 440 | Gln | Ser | Ser | Asp | Ser 445 | Arg | Ala | Phe |
| Ser Thr Val 450 | Pro Leu | Thr Pro | | Pro | Arg | Pro | Ser 460 | Asp | Ser | Val | Ser |
| Ser Thr Pro 465 | Ala Ala | Thr Ser | Thr | Pro | Ser | Lys 475 | Gln | Ala | Leu | Gln | Phe 480 |
| Phe Cys Tyr | Ile Cys 485 | | a Ser | Cys | Ser 490 | Ser | Gln | Gln | Glu | Phe 495 | Gln |
| Asp His Met | Ser Glu 500 | Pro Gli | n His | Gln 505 | Gln | Arg | Leu | Gly | Glu 510 | Ile | Gln |
| His Met Ser 515 | Gln Ala | Cys Let | 1 Leu 520 | Ser | Leu | Leu | Pro | Val 525 | Pro | Arg | Asp |
| Val Leu Glu 530 | Thr Glu | Asp Glu 535 | | Pro | Pro | Pro | Arg 540 | Arg | Trp | Cys | Asn |
| Thr Cys Gln 545 | Leu Tyr | Tyr Met | : Gly | Asp | Leu | Ile 555 | Gln | His | Arg | Arg | Thr 560 |
| Gln Asp His | Lys Ile 565 | Ala Lys | s Gln | Ser | Leu 570 | Arg | Pro | Phe | Cys | Thr 575 | Val |
| Cys Asn Arg | Tyr Phe 580 | Lys Thi | Pro | Arg 585 | Lys | Phe | Val | Glu | His 590 | Val | Lys |
| Ser Gln Gly 595 | His Lys | Asp Lys | Ala 600 | Lys | Glu | Leu | Lys | Ser 605 | Leu | Glu | Lys |
| Glu Ile Ala 610 | Gly Gln | Asp Glu | _ | His | Phe | Ile | Thr 620 | Val | Asp | Ala | Val |
| Gly Cys Phe | Glu Gly | Asp Glu | ı Glu | Glu | Glu | Glu | Asp | Asp | Glu | Asp | Glu |

Glu Glu Ile Glu Val Glu Glu Glu Leu Cys Lys Gln Val Arg Ser Arg 645 650 655

Asp Ile Ser Arg Glu Glu Trp Lys Gly Ser Glu Thr Tyr Ser Pro Asn 660 665 670

Thr Ala Tyr Gly Val Asp Phe Leu Val Pro Val Met Gly Tyr Ile Cys 675 680 685

Arg Ile Cys His Lys Phe Tyr His Ser Asn Ser Gly Ala Gln Leu Ser 690 695 700

His Cys Lys Ser Leu Gly His Phe Glu Asn Leu Gln Lys Tyr Lys Ala 705 710 715 720

Ala Lys Asn Pro Ser Pro Thr Thr Arg Pro Val Ser Arg Arg Cys Ala 725 730 735

Ile Asn Ala Arg Asn Ala Leu Thr Ala Leu Phe Thr Ser Ser Gly Arg
740 745 750

Pro Pro Ser Gln Pro Asn Thr Gln Asp Lys Thr Pro Ser Lys Val Thr 755 760 765

Ala Arg Pro Ser Gln Pro Pro Leu Pro Arg Arg Ser Thr Arg Leu Lys
770 780

Thr 785

<210> 64

<211> 889

<212> PRT

<213> Homo sapiens

<400> 64

Met Phe Ser Gln Gln Gln Gln Gln Leu Gln Gln Gln Gln Gln Gln Leu 1 5 10 15

| Gln | Leu | Leu 35 | Gln | Leu | Gln | Gln | Leu 40 | Leu | Gln | Gln | Ser | Pro 45 | Pro | Gln | Ala |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Pro | Leu 50 | Pro | Met | Ala | Val | Ser 55 | Arg | Gly | Leu | Pro | Pro 60 | Gln | Gln | Pro | Gln |
| Gln 65 | Pro | Leu | Leu | Asn | Leu 70 | Gln | Gly | Thr | Asn | Ser 75 | Ala | Ser | Leu | Leu | Asn 80 |
| Gly | Ser | Met | Leu | Gln 85 | Arg | Ala | Leu | Leu | Leu 90 | Gln | Gln | Leu | Gln | Gly 95 | Leu |
| Asp | Gln | Phe | Ala 100 | Met | Pro | Pro | Ala | Thr 105 | Tyr | Asp | Thr | Ala | Gly 110 | Leu | Thr |
| Met | Pro | Thr 115 | Ala | Thr | Leu | Gly | Asn 120 | Leu | Arg | Gly | Tyr | Gly 125 | Met | Ala | Ser |
| Pro | Gly 130 | Leu | Ala | Ala | Pro | Ser 135 | Leu | Thr | Pro | Pro | Gln 140 | Leu | Ala | Thr | Pro |
| Asn 145 | Leu | Gln | Gln | Phe | Phe 150 | Pro | Gln | Ala | Thr | Arg 155 | Gln | Ser | Leu | Leu | Gly 160 |
| Pro | Pro | Pro | Val | Gly 165 | Val | Pro | Met | Asn | Pro 170 | Ser | Gln | Phe | Asn | Leu 175 | Ser |
| Gly | Arg | Asn | Pro 180 | Gln | Lys | Gln | Ala | Arg 185 | Thr | Ser | Ser | Ser | Thr 190 | Thr | Pro |
| Asn | Arg | Lys 195 | Asp | Ser | Ser | Ser | Gln 200 | Thr | Met | Pro | Val | Glu 205 | Asp | Lys | Ser |
| Asp | Pro 210 | Pro | Glu | Gly | Ser | Glu 215 | Glu | Ala | Ala | Glu | Pro 220 | Arg | Met | Asp | Thr |
| Pro 225 | Glu | Asp | Gln | Asp | Leu 230 | Pro | Pro | Cys | Pro | Glu 235 | Asp | Ile | Ala | Lys | Glu 240 |
| Lys | Arg | Thr | Pro | Ala | Pro | Glu | Pro | Glu | Pro | Cys | Glu | Ala | Ser | Glu 255 | Leu |

| Pro Ala Lys | Arg Leu 260 | Arg Ser | | Glu (265 | Glu | Pro | Thr | Glu | Lys 270 | Glu | Pro |
|--------------------|----------------|----------------|------------|--------------|------------|------------|------------|------------|------------|------------|------------|
| Pro Gly Glr 275 | | Val Lys | Ala 280 | Gln : | Pro | Gln | Ala | Arg 285 | Met | Thr | Val |
| Pro Lys Glr 290 | Thr Gln | Thr Pro 295 | Asp | Leu : | Leu | Pro | Glu 300 | Ala | Leu | Glu | Ala |
| Gln Val Let 305 | ı Pro Arg | Phe Gln 310 | Pro . | Arg ' | Val | Leu 315 | Gln | Val | Gln | Ala | Gln 320 |
| Val Gln Sei | Gln Thr 325 | Gln Pro | Arg | | Pro 330 | Ser | Thr | Asp | Thr | Gln 335 | Val |
| Gln Pro Lys | Leu Gln 340 | Lys Gln | | Gln ' 345 | Thr | Gln | Thr | Ser | Pro 350 | Glu | His |
| Leu Val Leu 359 | | Lys Gln | Val 360 | Gln 1 | Pro | Gln | Leu | Gln 365 | Gln | Glu | Ala |
| Glu Pro Gli 370 | ı Lys Gln | Val Gln 375 | Pro | Gln ' | Val | Gln | Pro 380 | Gln | Ala | His | Ser |
| Gln Gly Pro 385 | Arg Gln | Val Gln 390 | Leu | Gln (| Gln | Glu 395 | Ala | Glu | Pro | Leu | Lys 400 |
| Gln Val Glr | Pro Gln 405 | Val Gln | Pro | | Ala 410 | His | Ser | Gln | Pro | Pro 415 | Arg |
| Gln Val Glr | Leu Gln 420 | Leu Gln | _ | Gln ' 425 | Val | Gln | Thr | Gln | Thr 430 | Tyr | Pro |
| Gln Val His | | Ala Gln | Pro 440 | Ser ' | Val | Gln | Pro | Gln 445 | Glu | His | Pro |
| Pro Ala Glr 450 | ı Val Ser | Val Gln 455 | Pro | Pro (| Glu | Gln | Thr 460 | His | Glu | Gln | Pro |
| His Thr Glr 465 | ı Pro Gln | Val Ser 470 | Leu | Leu i | Ala | Pro 475 | Glu | Gln | Thr | Pro | Val 480 |
| Val Val His | . Val Cys | Gly Leu | Glu i | Met 1 | Pro | Pro | Asp | Ala | Val | Glu | Ala |

495 490 495

| Gly | Gly | Gly | Met 500 | Glu | Lys | Thr | Leu | Pro 505 | Glu | Pro | Val | Gly | Thr 510 | Gln | Val |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Ser | Met | Glu 515 | Glu | Ile | Gln | Asn | Glu 520 | Ser | Ala | Cys | Gly | Leu 525 | Asp | Val | Gly |
| Glu | Cys 530 | Glu | Asn | Arg | Ala | Arg 535 | Glu | Met | Pro | Gly | Val 540 | Trp | Gly | Ala | Gly |
| Gly 545 | Ser | Leu | Lys | Val | Thr 550 | Ile | Leu | Gln | Ser | Ser 555 | Asp | Ser | Arg | Ala | Phe 560 |
| Ser | Thr | Val | Pro | Leu 565 | Thr | Pro | Val | Pro | Arg 570 | Pro | Ser | Asp | Ser | Val 575 | Ser |
| Ser | Thr | Pro | Ala 580 | Ala | Thr | Ser | Thr | Pro 585 | Ser | Lys | Gln | Ala | Leu 590 | Gln | Phe |
| Phe | Cys | Tyr 595 | Ile | Cys | Lys | Ala | Ser 600 | Cys | Ser | Ser | Gln | Gln 605 | Glu | Phe | Gln |
| Asp | His 610 | Met | Ser | Glu | Pro | Gln 615 | His | Gln | Gln | Arg | Leu 620 | Gly | Glu | Ile | Gln |
| His 625 | Met | Ser | Gln | Ala | Cys 630 | Leu | Leu | Ser | Leu | Leu 635 | Pro | Val | Pro | Arg | Asp 640 |
| Val | Leu | Glu | Thr | Glu 645 | Asp | Glu | Glu | Pro | Pro 650 | Pro | Arg | Arg | Trp | Cys 655 | Asn |
| Thr | Cys | Gln | Leu 660 | Tyr | Tyr | Met | Gly | Asp 665 | Leu | Ile | Gln | His | Arg 670 | Arg | Thr |
| Gln | Asp | His 675 | Lys | Ile | Ala | Lys | Gln 680 | Ser | Leu | Arg | Pro | Phe 685 | Cys | Thr | Val |
| Cys | Asn 690 | Arg | Tyr | Phe | Lys | Thr 695 | Pro | Arg | Lys | Phe | Val 700 | Glu | His | Val | Lys |
| Ser 705 | Gln | Gly | His | Lys | Asp 710 | Lys | Ala | Lys | Glu | Leu 715 | Lys | Ser | Leu | Glu | Lys 720 |

Glu Ile Ala Gly Gln Asp Glu Asp His Phe Ile Thr Val Asp Ala Val 725 730 735 Gly Cys Phe Glu Gly Asp Glu Glu Glu Glu Asp Asp Glu Asp Glu 745 Glu Glu Ile Glu Val Arg Ser Arg Asp Ile Ser Arg Glu Glu Trp Lys 760 Gly Ser Glu Thr Tyr Ser Pro Asn Thr Ala Tyr Gly Val Asp Phe Leu 775 Val Pro Val Met Gly Tyr Ile Cys Arg Ile Cys His Lys Phe Tyr His 785 790 795 Ser Asn Ser Gly Ala Gln Leu Ser His Cys Lys Ser Leu Gly His Phe 805 810 Glu Asn Leu Gln Lys Tyr Lys Ala Ala Lys Asn Pro Ser Pro Thr Thr 820 825 830 Arg Pro Val Ser Arg Arg Cys Ala Ile Asn Ala Arg Asn Ala Leu Thr 835 840 845 Ala Leu Phe Thr Ser Ser Gly Arg Pro Pro Ser Gln Pro Asn Thr Gln 855 Asp Lys Thr Pro Ser Lys Val Thr Ala Arg Pro Ser Gln Pro Pro Leu 870 875 Pro Arg Arg Ser Thr Arg Leu Lys Thr 885 <210> 65 <211> 873 <212> PRT <213> Homo sapiens

10

15

Met Phe Ser Gln Gln Gln Gln Leu Gln Gln Gln Gln Gln Leu

<400> 65

5

| Gin | Gin | Leu | 20 | GIn | GIN | GIn | ьeu | 25 | GIN | GIN | Gin | Leu | 30 | GIN | GIN |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Gln | Leu | Leu 35 | Gln | Leu | Gln | Gln | Leu 40 | Leu | Gln | Gln | Ser | Pro 45 | Pro | Gln | Ala |
| Pro | Leu 50 | Pro | Met | Ala | Val | Ser 55 | Arg | Gly | Leu | Pro | Pro 60 | Gln | Gln | Pro | Gln |
| Gln 65 | Pro | Leu | Leu | Asn | Leu 70 | Gln | Gly | Thr | Asn | Ser 75 | Ala | Ser | Leu | Leu | Asn 80 |
| Gly | Ser | Met | Leu | Gln 85 | Arg | Ala | Leu | Leu | Leu 90 | Gln | Gln | Leu | Gln | Gly 95 | Asn |
| Leu | Arg | Gly | Tyr 100 | Gly | Met | Ala | Ser | Pro 105 | Gly | Leu | Ala | Ala | Pro 110 | Ser | Leu |
| Thr | Pro | Pro 115 | Gln | Leu | Ala | Thr | Pro 120 | Asn | Leu | Gln | Gln | Phe 125 | Phe | Pro | Gln |
| Ala | Thr 130 | Arg | Gln | Ser | Leu | Leu 135 | Gly | Pro | Pro | Pro | Val 140 | Gly | Val | Pro | Met |
| Asn 145 | Pro | Ser | Gln | Phe | Asn 150 | Leu | Ser | Gly | Arg | Asn 155 | Pro | Gln | Lys | Gln | Ala 160 |
| Arg | Thr | Ser | Ser | Ser 165 | Thr | Thr | Pro | Asn | Arg 170 | Lys | Asp | Ser | Ser | Ser 175 | Gln |
| Thr | Met | Pro | Val 180 | Glu | Asp | Lys | Ser | Asp 185 | Pro | Pro | Glu | Gly | Ser 190 | Glu | Glu |
| Ala | Ala | Glu 195 | Pro | Arg | Met | Asp | Thr 200 | Pro | Glu | Asp | Gln | Asp 205 | Leu | Pro | Pro |
| Суз | Pro 210 | Glu | Asp | Ile | Ala | Lys 215 | Glu | Lys | Arg | Thr | Pro 220 | Ala | Pro | Glu | Pro |
| Glu 225 | Pro | Cys | Glu | Ala | Ser 230 | Glu | Leu | Pro | Ala | Lys 235 | Arg | Leu | Arg | Ser | Ser 240 |
| Glu | Glu | Pro | Thr | Glu | Lys | Glu | Pro | Pro | Gly | Gln | Leu | Gln | Val | Lys | Ala |

| 245 | 250 | 255 |
|-----|-----|-----|
| | 200 | |

Gln Pro Gln Ala Arg Met Thr Val Pro Lys Gln Thr Gln Thr Pro Asp 260 265 270

| Leu | Leu | Pro 275 | Glu | Ala | Leu | Glu | Ala 280 | Gln | Val | Leu | Pro | Arg 285 | Phe | Gln | Pro |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Arg | Val 290 | Leu | Gln | Val | Gln | Ala 295 | Gln | Val | Gln | Ser | Gln 300 | Thr | Gln | Pro | Arg |
| Ile 305 | Pro | Ser | Thr | Asp | Thr 310 | Gln | Val | Gln | Pro | Lys 315 | Leu | Gln | Lys | Gln | Ala 320 |
| Gln | Thr | Gln | Thr | Ser 325 | Pro | Glu | His | Leu | Val 330 | Leu | Gln | Gln | Lys | Gln 335 | Val |
| Gln | Pro | Gln | Leu 340 | Gln | Gln | Glu | Ala | Glu 345 | Pro | Gln | Lys | Gln | Val 350 | Gln | Pro |
| Gln | Val | Gln 355 | Pro | Gln | Ala | His | Ser 360 | Gln | Gly | Pro | Arg | Gln 365 | Val | Gln | Leu |
| Gln | Gln 370 | Glu | Ala | Glu | Pro | Leu 375 | Lys | Gln | Val | Gln | Pro 380 | Gln | Val | Gln | Pro |
| Gln 385 | Ala | His | Ser | Gln | Pro 390 | Pro | Arg | Gln | Val | Gln 395 | Leu | Gln | Leu | Gln | Lys 400 |
| Gln | Val | Gln | Thr | Gln 405 | Thr | Tyr | Pro | Gln | Val 410 | His | Thr | Gln | Ala | Gln 415 | Pro |
| Ser | Val | Gln | Pro 420 | Gln | Glu | His | Pro | Pro 425 | Ala | Gln | Val | Ser | Val 430 | Gln | Pro |
| Pro | Glu | Gln 435 | Thr | His | Glu | Gln | Pro 440 | His | Thr | Gln | Pro | Gln 445 | Val | Ser | Leu |
| Leu | Ala 450 | Pro | Glu | Gln | Thr | Pro 455 | Val | Val | Val | His | Val 460 | Cys | Gly | Leu | Glu |
| Met 465 | Pro | Pro | Asp | Ala | Val 470 | Glu | Ala | Gly | Gly | Gly 475 | Met | Glu | Lys | Thr | Leu 480 |
| | | | | | | | | | | | | | | | |

| Pro | Glu | Pro | Val | Gly 485 | Thr | Gln | Val | Ser | Met 490 | Glu | Glu | Ile | Gln | Asn 495 | Glu |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Ser | Ala | Cys | Gly 500 | Leu | Asp | Val | Gly | Glu 505 | Cys | Glu | Asn | Arg | Ala 510 | Arg | Glu |
| Met | Pro | Gly 515 | Val | Trp | Gly | Ala | Gly 520 | Gly | Ser | Leu | Lys | Val 525 | Thr | Ile | Leu |
| Gln | Ser 530 | Ser | Asp | Ser | Arg | Ala 535 | Phe | Ser | Thr | Val | Pro 540 | Leu | Thr | Pro | Val |
| Pro 545 | Arg | Pro | Ser | Asp | Ser 550 | Val | Ser | Ser | Thr | Pro 555 | Ala | Ala | Thr | Ser | Thr 560 |
| Pro | Ser | Lys | Gln | Ala 565 | Leu | Gln | Phe | Phe | Cys 570 | Tyr | Ile | Cys | Lys | Ala 575 | Ser |
| Cys | Ser | Ser | Gln 580 | Gln | Glu | Phe | Gln | Asp 585 | His | Met | Ser | Glu | Pro 590 | Gln | His |
| Gln | Gln | Arg 595 | Leu | Gly | Glu | Ile | Gln 600 | His | Met | Ser | Gln | Ala 605 | Cys | Leu | Leu |
| Ser | Leu 610 | Leu | Pro | Val | Pro | Arg 615 | Asp | Val | Leu | Glu | Thr 620 | Glu | Asp | Glu | Glu |
| Pro 625 | Pro | Pro | Arg | Arg | Trp 630 | Cys | Asn | Thr | Cys | Gln 635 | Leu | Tyr | Tyr | Met | Gly 640 |
| Asp | Leu | Ile | Gln | His 645 | Arg | Arg | Thr | Gln | Asp 650 | His | Lys | Ile | Ala | Lys 655 | Gln |
| Ser | Leu | Arg | Pro 660 | Phe | Cys | Thr | Val | Cys 665 | Asn | Arg | Tyr | Phe | Lys 670 | Thr | Pro |
| Arg | Lys | Phe 675 | Val | Glu | His | Val | Lys 680 | Ser | Gln | Gly | His | Lys 685 | Asp | Lys | Ala |
| Lys | Glu 690 | Leu | Lys | Ser | Leu | Glu 695 | Lys | Glu | Ile | Ala | Gly 700 | Gln | Asp | Glu | Asp |

| 705 | | | | | 710 | | | | | 715 | | | | | 720 | |
|------------------------------|--------------|---------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-----|
| Glu | Glu | Glu | Asp | Asp 725 | Glu | Asp | Glu | Glu | Glu 730 | Ile | Glu | Val | Glu | Glu 735 | Glu | |
| Leu | Cys | Lys | Gln 740 | Val | Arg | Ser | Arg | Asp 745 | Ile | Ser | Arg | Glu | Glu 750 | Trp | Lys | |
| Gly | Ser | Glu 755 | Thr | Tyr | Ser | Pro | Asn 760 | Thr | Ala | Tyr | Gly | Val 765 | Asp | Phe | Leu | |
| Val | Pro 770 | Val | Met | Gly | Tyr | Ile 775 | Cys | Arg | Ile | Cys | His 780 | Lys | Phe | Tyr | His | |
| Ser 785 | Asn | Ser | Gly | Ala | Gln 790 | Leu | Ser | His | Cys | Lys 795 | Ser | Leu | Gly | His | Phe 800 | |
| Glu | Asn | Leu | Gln | Lys 805 | Tyr | Lys | Ala | Ala | Lys 810 | Asn | Pro | Ser | Pro | Thr 815 | Thr | |
| Arg | Pro | Val | Ser 820 | Arg | Arg | Cys | Ala | Ile 825 | Asn | Ala | Arg | Asn | Ala 830 | Leu | Thr | |
| Ala | Leu | Phe 835 | Thr | Ser | Ser | Gly | Arg 840 | Pro | Pro | Ser | Gln | Pro 845 | Asn | Thr | Gln | |
| Asp | Lys 850 | Thr | Pro | Ser | Lys | Val 855 | Thr | Ala | Arg | Pro | Ser 860 | Gln | Pro | Pro | Leu. | |
| Pro 865 | Arg | Arg | Ser | Thr | Arg 870 | Leu | Lys | Thr | | | | | | | | |
| <210 <211 <212 <213 | L> 2 2> I | 56 2821 DNA Homo | sapi | iens | | | | | | | | | | | | |
| <400 tggg | | se cgc g | 3999 | ccgg | cc ca | atccg | gtggg | g gg¢ | cgact | tga | gcgt | tgag | ggg (| cgcgc | egggga | 60 |
| ggcg | gage | cac o | catgt | tcaç | gc ca | agcag | gcago | ago | cagct | cca | gcaa | acago | ag g | ggcco | ccgttg | 120 |
| ccca | atggo | ctg t | cago | ccggg | aa a | ctccc | cccc | g cag | gcago | ccac | agca | gccg | gct t | ctga | atctc | 180 |

His Phe Ile Thr Val Asp Ala Val Gly Cys Phe Glu Gly Asp Glu Glu

cagggeacca acteageete cetecteaac ggeteeatge tgeagagage tttgetttta 240 300 cagcagttgc aaggactgga ccagtttgca atgccaccag ccacgtatga cactgccggt 360 420 ctegeagece ceagecteae acceceacaa etggecacte caaatttgca acagttettt 480 ccccaggcca ctcgccagtc cttgctggga cctcctcctg ttggggtccc catgaaccct teccagttea acettteagg aeggaaeece cagaaaeagg eeeggaeete etectetaee .540 acceccaate gaaaggatte ttetteteag acaatgeetg tggaagacaa gteagaceee 600 ccagagggt ctgaggaagc cgcagagccc cggatggaca caccagaaga ccaagattta 660 ccgccctgcc cagaggacat cgccaaggaa aaacgcactc cagcacctga gcctgagcct 720 tgtgaggcgt ccgagctgcc agcaaagaga ttgaggagct cagaagagcc cacagagaag 780 840 gaacetecag ggcagttaca ggtgaaggee cageegeagg eeeggatgae agtaeegaaa 900 cagacacaga caccagacct gctgcctgag gccctggaag cccaagtgct gccacgattc 960 cagccacggg tcctgcaggt ccaggcccag gtgcagtcac agactcagcc gcggatacca 1020 tecacagaca eccaggtgea gecaaagetg cagaageagg egeaaacaca gaceteteea 1080 gagcacttag tgctgcaaca gaagcaggtg cagccacagc tgcagcagga ggcagagcca cagaagcagg tgcagccaca ggtacagcca caggcacatt cacagggccc aaggcaggtg 1140 1200 cagetgeage aggaggeaga geegetgaag caggtgeage caeaggtgea geeceaggea cattcacage ceceaaggea ggtgeagetg cagetgeaga ageaggteea gacacagaca 1260 1320 tatccacagg tccacacaca ggcacagcca agcgtccagc cacaggagca tcctccagcg 1380 caggtgtcag tacagccacc agagcagacc catgagcagc ctcacaccca gccgcaggtg tegttgetgg etceagagea aacaccagtt gtggtteatg tetgeggget ggagatgeea 1440 1500 cctgatgcag tagaagctgg tggaggcatg gaaaagacct tgccagagcc tgtgggcacc 1560 caagtcagca tggaagagat tcagaatgag tcggcctgtg gcctagatgt gggagaatgt 1620 gaaaacagag cgagagagat gccaggggta tggggcgccg ggggctccct gaaggtcacc 1680 attetgeaga geagtgacag cegggeettt ageaetgtae eeetgacaee tgteeeeege 1740 cccagtgact ccgtctcctc caccctgcg gctaccagca ctccctctaa gcaggccctc cagttettet getacatetg caaggecage tgetecagee ageaggagtt ceaggaceae 1800 atqtcggagc ctcagcacca gcagcggcta ggggagatcc agcacatgag ccaagcctgc 1860 ctcctgtccc tgctgcccgt gccccgggac gtcctggaga cagaggatga ggagcctcca 1920

ccaaggcgct ggtgcaacac ctgccagctc tactacatgg gggacctgat ccaacaccgc 1980 aggacacagg accacaagat tgccaaacaa tccttgcgac ccttctgcac cgtttgcaac 2040 2100 cgctacttca aaacccctcg caagtttgtg gagcacgtga agtcccaggg gcataaggac 2160 aaagccaagg agctgaagtc gcttgagaaa gaaattgctg gccaagatga ggaccacttc 2220 attacagtgg acgctgtggg ttgcttcgag ggtgatgaag aagaggaaga ggatgatgag 2280 gatgaagaag agatcgaggt tgaggaggaa ctctgcaagc aggtgaggtc cagagatata tccagagagg agtggaaggg ctcggagacc tacagcccca atactgcata tggtgtggac 2340 ttcctggtgc ccgtgatggg ctatatctgc cgcatctgcc acaagttcta tcacagcaac 2400 tcaggggcac agetetecca etgeaagtee etgggeeaet ttgagaaeet geagaaatae 2460 aaggeggeea agaaceeeag eeccaceace egaeetgtga geegeeggtg egeaateaae 2520 geceggaaeg etttgaeage cetgtteaee tecageggee geceaecete ecageceaae 2580 acccaggaca aaacacccag caaggtgacg gctcgaccct cccagccccc actacctcgg 2640 egeteaacce geeteaaaac etgatagagg gaceteeetg teeetggeet geetgggtee 2700 agatotgota atgottttta ggagtotgoo tggaaacttt gacatggtto atgtttttac 2760 2820 2821 a

<210> 67

<211> 2850

<212> DNA

<213> Homo sapiens

<400> 67

60 tgggggetge ggggeeggee cateegtggg ggegaettga gegttgaggg egegegggga ggcgagccac catgttcagc cagcagcagc agcagctcca gcaacagcag cagcagctcc 120 agcagttaca gcagcagcag ctccagcagc agcaattgca gcagcagcag ttactgcagc 180 tecageaget getecageag tececaceae aggeceegtt geceatgget gteageeggg 240 ggetececce geageageea eageageege ttetgaatet eeagggeace aacteageet 300 ccctcctcaa cggctccatg ctgcagagag ctttgctttt acagcagttg caaggtaacc 360 tecgaggeta tggeatggea tecceaggee tegeageece cageeteaca ecceaacaae 420 tggccactcc aaatttgcaa cagttctttc cccaggccac tcgccagtcc ttgctgggac 480 etecteetgt tggggteece atgaaceett eccagtteaa eettteagga eggaaceeee 540

600 agaaacaggc ccggacctcc tcctctacca cccccaatcg aaaggattct tcttctcaga 660 caatgeetgt ggaagacaag teagaeeeee cagaggggte tgaggaagee geagageeee 720 ggatggacac accagaagac caagatttac cgccctgccc agaggacatc gccaaggaaa aacgcactcc agcacctgag cctgagcctt gtgaggcgtc cgagctgcca gcaaagagat 780 840 tgaggagete agaagageee acagagaagg aaceteeagg geagttaeag gtgaaggeee 900 ageegeagge eeggatgaca gtacegaaac agacacagac accagacetg etgeetgagg ccctggaagc ccaagtgctg ccacgattcc agccacgggt cctgcaggtc caggcccagg 960 1020 tgcagtcaca gactcagccg cggataccat ccacagacac ccaggtgcag ccaaagctgc agaagcaggc gcaaacacag acctctccag agcacttagt gctgcaacag aagcaggtgc 1080 1140 agecacaget geageaggag geagageeae agaageaggt geageeaeag gtacageeae aggcacattc acagggccca aggcaggtgc agctgcagca ggaggcagag ccgctgaagc 1200 1260 aggtgcagcc acaggtgcag ccccaggcac attcacagcc cccaaggcag gtgcagctgc 1320 agctgcagaa gcaggtccag acacagacat atccacaggt ccacacacag gcacagccaa gcgtccagcc acaggagcat cctccagcgc aggtgtcagt acagccacca gagcagaccc 1380 atgagcagcc tcacacccag ccgcaggtgt cgttgctggc tccagagcaa acaccagttg 1440 tggttcatgt ctgcgggctg gagatgccac ctgatgcagt agaagctggt ggaggcatgg 1500 1560 aaaagacctt gccagagcct gtgggcaccc aagtcagcat ggaagagatt cagaatgagt 1620 cggcctgtgg cctagatgtg ggagaatgtg aaaacagagc gagagagatg ccaggggtat 1680 ggggcgccgg gggctccctg aaggtcacca ttctgcagag cagtgacagc cgggccttta 1740 geactgtace cetgaeacet gteeceegee ceagtgaete egteteetee acceetgegg 1800 ctaccagcac tecetetaag caggeeetee agttettetg etacatetge aaggeeaget 1860 gctccagcca gcaggagttc caggaccaca tgtcggagcc tcagcaccag cagcggctag 1920 gggagateca geacatgage caageetgee teetgteeet getgeeegtg eeeegggaeg 1980 tectggagae agaggatgag gageeteeae caaggegetg gtgeaacaee tgeeagetet 2040 actacatggg ggacctgatc caacaccgca ggacacagga ccacaagatt gccaaacaat 2100 cettgegace ettetgeace gtttgeaace getaetteaa aacceetege aagtttgtgg 2160 aqcacqtqaa gtcccagggg cataaggaca aagccaagga gctgaagtcg cttgagaaag aaattgetgg ccaagatgag gaccaettca ttacagtgga cgetgtgggt tgettegagg 2220

2280 gtgatgaaga agaggaagag gatgatgagg atgaagaaga gatcgaggtt gaggaaggaac tctgcaagca ggtgaggtcc agagatatat ccagagagga gtggaagggc tcggagacct 2340 2400 acagececaa tactgeatat ggtgtggaet teetggtgee egtgatggge tatatetgee 2460 gcatctgcca caagttctat cacagcaact caggggcaca gctctcccac tgcaagtccc 2520 tgggccactt tgagaacctg cagaaataca aggcggccaa gaaccccagc cccaccaccc 2580 gacctgtgag ccgccggtgc gcaatcaacg cccggaacgc tttgacagcc ctgttcacct 2640 ccageggeeg eccaecetee cageecaaca eccaggacaa aacaeceage aaggtgaegg ctegaccete ccagececca etacetegge geteaaceeg ceteaaaace tgatagaggg 2700 2760 acctccctgt ccctggcctg cctgggtcca gatctgctaa tgctttttag gagtctgcct ggaaactttg acatggttca tgtttttact caaaatccaa taaaacaagg tagtttggct 2820 2850 gtgcaaaaaa aaaaaaaaaa aaaaaaaaaa

<210> 68

<211> 2907

<212> DNA

<213> Homo sapiens

<400> 68 60 tgggggctgc ggggccggcc catccgtggg ggcgacttga gcgttgaggg cgcgcgggga ggcgagccac catgttcagc cagcagcagc agcagctcca gcaacagcag cagcagctcc 120 180 agcagttaca gcagcagcag ctccagcagc agcaattgca gcagcagcag ttactgcagc 240 tecageaget getecageag tecceaceae aggeceegtt geceatgget gteageeggg 300 ggeteecce geageageea cageageege ttetgaatet eeagggeace aacteageet 360 ccctcctcaa cggctccatg ctgcagagag ctttgctttt acagcagttg caaggactgg 420 accagtttgc aatgccacca gccacgtatg acactgccgg tctcaccatg cccacagcaa 480 cactgggtaa ceteegagge tatggeatgg cateeceagg cetegeagee ceeageetea cacccccaca actggccact ccaaatttgc aacagttett tececaggee actegecagt 540 ccttgctggg acctcctcct gttggggtcc ccatgaaccc ttcccagttc aacctttcag 600 gacggaaccc ccagaaacag gcccggacct cctcctctac cacccccaat cgaaagacaa 660 720 tgcctgtgga agacaagtca gaccccccag aggggtctga ggaagccgca gagccccgga 780 tggacacacc agaagaccaa gatttaccgc cctgcccaga ggacatcgcc aaggaaaaac

840

gcactccage acetgageet gageettgtg aggegteega getgeeagea aagagattga

ggageteaga agageeeaca gagaaggaae eteeagggea gttacaggtg aaggeeeage 900 960 cgcaggcccg gatgacagta ccgaaacaga cacagacacc agacctgctg cctgaggccc 1020 tggaagccca agtgctgcca cgattccagc cacgggtcct gcaggtccag gcccaggtgc 1080 agtcacagac tcagccgcgg ataccatcca cagacaccca ggtgcagcca aagctgcaga 1140 agcaggegea aacacagace tetecagage acttagtget geaacagaag caggtgeage 1200 cacagetgca gcaggaggca gagccacaga agcaggtgca gccacaggta cagccacagg cacattcaca gggcccaagg caggtgcagc tgcagcagga ggcagagccg ctgaagcagg 1260 tgcagccaca ggtgcagccc caggcacatt cacagccccc aaggcaggtg cagctgcagc 1320 tgcagaagca ggtccagaca cagacatatc cacaggtcca cacacaggca cagccaagcg 1380 tecagecaca ggageatect ecagegeagg tgteagtaca gecaceagag eagacecatg 1440 agcageetea cacceageeg caggtgtegt tgetggetee agageaaaca ceagttgtgg 1500 1560 ttcatgtctg cgggctggag atgccacctg atgcagtaga agctggtgga ggcatggaaa 1620 agaccttgcc agagcctgtg ggcacccaag tcagcatgga agagattcag aatgagtcgg 1680 cctgtggcct agatgtggga gaatgtgaaa acagagcgag agagatgcca ggggtatggg 1740 gcgccggggg ctccctgaag gtcaccattc tgcagagcag tgacagccgg gcctttagca etgtacceet gacacetgte eccegeceea gtgacteegt etectecace eetgeggeta 1800 ccagcactcc ctctaagcag gccctccagt tcttctgcta catctgcaag gccagctgct 1860 1920 ccagccagca ggagttccag gaccacatgt cggagcctca gcaccagcag cggctagggg 1980 agatecagea catgagecaa geetgeetee tgteeetget geeegtgeee egggaegtee 2040 tggagacaga ggatgaggag cetecaecaa ggegetggtg caacacetge cagetetaet 2100 acatggggga cctgatccaa caccgcagga cacaggacca caagattgcc aaacaatcct 2160 tgcgaccett etgcacegtt tgcaaceget acttcaaaac eeetegcaag tttgtggage 2220 acgtgaagtc ccaggggcat aaggacaaag ccaaggagct gaagtcgctt gagaaagaaa 2280 ttgctggcca agatgaggac cacttcatta cagtggacgc tgtgggttgc ttcgagggtg atgaagaaga ggaagaggat gatgaggatg aagaagagat cgaggttgag gaggaactct 2340 2400 gcaagcaggt gaggtccaga gatatatcca gagaggagtg gaagggctcg gagacctaca 2460 gccccaatac tgcatatggt gtggacttcc tggtgcccgt gatgggctat atctgccgca 2520 tctgccacaa gttctatcac agcaactcag gggcacagct ctcccactgc aagtccctgg 2580 gccactttga gaacctgcag aaatacaagg cggccaagaa ccccagccc accacccgac

<210> 69

<211> 2836

<212> DNA

<213> Homo sapiens

<400> 69

tgggggetge ggggeeggee cateegtggg ggegaettga gegttgaggg egegegggga 60 120 ggcgagccac catgttcagc cagcagcagc agcagctcca gcaacagcag cagcagctcc 180 agcagttaca gcagcagcag ctccagcagc agcaattgca gcagcagcag ttactgcagc tecageaget getecageag tececaceae aggeceegtt geceatgget gteageeggg 240 ggetecece geageageca cageageege ttetgaatet ceagggeace aacteageet 300 ecetecteaa eggetecatg etgeagagag etttgetttt acageagttg caaggaetgg 360 accagtttgc aatgccacca gccacgtatg acactgccgg tctcaccatg cccacagcaa 420 cactgggtaa cctccgaggc tatggcatgg catccccagg cctcgcagcc cccagcctca 480 cacccccaca actggccact ccaaatttgc aacagttctt tccccaggcc actcgccagt 540 cettgetggg acctectect gttggggtee ceatgaacce tteccagtte aacettteag 600 660 gacggaaccc ccagaaacag gcccggacct cctcctctac cacccccaat cgaaaggatt cttcttctca gacaatgcct gtggaagaca agtcagaccc cccagagggg tctgaggaag 720 780 ccgcagagcc ccggatggac acaccagaag accaagattt accgccctgc ccagaggaca 840 tegecaagga aaaaegeaet eeageaeetg ageetgagee ttgtgaggeg teegagetge 900 cagcaaagag attgaggagc tcagaagagc ccacagagaa ggaacctcca gggcagttac 960 aggtgaaggc ccagccgcag gcccggatga cagtaccgaa acagacacag acaccagacc tgctgcctga ggccctggaa gcccaagtgc tgccacgatt ccagccacgg gtcctgcagg 1020 tecaggeeca ggtgeagtea cagaeteage egeggataee atecaeagae acceaggtge 1080 agccaaagct gcagaagcag gcgcaaacac agacctctcc agagcactta gtgctgcaac 1140

1200 agaagcaggt gcagccacag ctgcagcagg aggcagagcc acagaagcag gtgcagccac 1260 aggtacagcc acaggcacat tcacagggcc caaggcaggt gcagctgcag caggaggcag 1320 agccgctgaa gcaggtgcag acaggtccac acacaggcac agccaagcgt ccagccacag 1380 gagcatecte cagegeaggt gteagtacag ceaecagage agacecatga geageeteae 1440 acceageege aggtgtegtt getggeteea gageaaacae eagttgtggt teatgtetge 1500 gggctggaga tgccacctga tgcagtagaa gctggtggag gcatggaaaa gaccttgcca 1560 gagectgtgg geacceaagt cageatggaa gagatteaga atgagtegge etgtggeeta 1620 gatgtgggag aatgtgaaaa cagagcgaga gagatgccag gggtatgggg cgccgggggc tccctgaagg tcaccattct gcagagcagt gacagccggg cctttagcac tgtacccctg 1680 1740 acacctgtcc cccgccccag tgactccgtc tcctccaccc ctgcggctac cagcactccc tctaagcagg ccctccagtt cttctgctac atctgcaagg ccagctgctc cagccagcag 1800 1860 gagttccagg accacatgtc ggagcctcag caccagcagc ggctagggga gatccagcac 1920 atgagecaag cetgeeteet gteeetgetg eeegtgeece gggaegteet ggagacagag 1980 gatgaggagc ctccaccaag gcgctggtgc aacacctgcc agctctacta catgggggac ctgatccaac accgcaggac acaggaccac aagattgcca aacaatcctt gcgacccttc 2040 tgcaccgttt gcaaccgcta cttcaaaacc cctcgcaagt ttgtggagca cgtgaagtcc 2100 2160 caggggcata aggacaaagc caaggagctg aagtcgcttg agaaagaaat tgctggccaa gatgaggacc acttcattac agtggacgct gtgggttgct tcgagggtga tgaagaagag 2220 2280 gaagaggatg atgaggatga agaagagatc gaggttgagg aggaactctg caagcaggtg 2340 aggtccagag atatatccag agaggagtgg aagggctcgg agacctacag ccccaatact 2400 gcatatggtg tggacttcct ggtgcccgtg atgggctata tctgccgcat ctgccacaag ttctatcaca gcaactcagg ggcacagctc tcccactgca agtccctggg ccactttgag 2460 aacctgcaga aatacaaggc ggccaagaac cccagcccca ccacccgacc tgtgagccgc 2520 cggtgcgcaa tcaacgcccg gaacgctttg acagccctgt tcacctccag cggccgccca 2580 ccctcccagc ccaacaccca ggacaaaaca cccagcaagg tgacggctcg accctcccag 2640 2700 ccccactac cteggegete aaccegecte aaaacetgat agagggacet ccctgteect 2760 ggcctgcctg ggtccagatc tgctaatgct ttttaggagt ctgcctggaa actttgacat 2820

aaaaaaaaa aaaaaa 2836

- <210> 70 <211> 2754 <212> DNA
- <213> Homo sapiens

<400> 70 tgggggctgc ggggccggcc catccgtggg ggcgacttga gcgttgaggg cgcgcgggga 60 ggcgagccac catgttcagc cagcagcagc agcagctcca gcaacagcag cagcagctcc 120 180 agcagttaca gcagcagcag ctccagcagc agcaattgca gcagcagcag ttactgcagc tecageaget getecageag tececaceae aggeeeegtt geceatgget gteageeggg 240 300 ggetecece geageageca cageageege ttetgaatet ceagggeace aacteageet 360 ccctcctcaa cggctccatg ctgcagagag ctttgctttt acagcagttg caaggactgg accagtttgc aatgccacca gccacgtatg acactgccgg tctcaccatg cccacagcaa 420 cactgggtaa cctccgaggc tatggcatgg catccccagg cctcgcagcc cccagcctca 480 cacceccaca actggccact ccaaatttgc aacagttett teeccaggec actegecagt 540 cettgetggg acctectect gttggggtee ceatgaacee tteecagtte aacettteag 600 gacggaaccc ccagaaacag gcccggacct cctcctctac cacccccaat cgaaaggatt 660 ettettetea gacaatgeet gtggaagaca agteagacee eecagagggg tetgaggaag 720 ccgcagagcc ccggatggac acaccagaag accaagattt accgccctgc ccagaggaca 780 tegecaagga aaaaegeaet eeageaeetg ageetgagee ttgtgaggeg teegagetge 840 900 cagcaaagag attgaggagc tcagaagagc ccacagagaa ggaacctcca gggcagttac 960 aggtgaaggc ccagccgcag gcccggatga cagtaccgaa acagacacag acaccagacc 1020 tgctgcctga ggccctggaa gcccaagtgc tgccacgatt ccagccacgg gtcctgcagg tecaggeeca ggtgeagtea cagaeteage egeggataee atecaeagae acceaggtge 1080 agccaaagct gcagaagcag gcgcaaacac agacctctcc agagcactta gtgctgcaac 1140 agaagcaggt gcagccacag ctgcagcagg aggcagagcc acagaagcag gtgcagccac 1200 aggtecacae acaggeacag ecaagegtee agecaeagga geatecteea gegeaggtgt 1260 1320 cagtacagcc accagagcag acccatgagc agcctcacac ccagccgcag gtgtcgttgc 1380 tggctccaga gcaaacacca gttgtggttc atgtctgcgg gctggagatg ccacctgatg cagtagaagc tggtggaggc atggaaaaga ccttgccaga gcctgtgggc acccaagtca 1440

1500 gcatggaaga gattcagaat gagtcggcct gtggcctaga tgtgggagaa tgtgaaaaca 1560 gagcgagaga gatgccaggg gtatggggcg ccgggggctc cctgaaggtc accattctgc 1620 agagcagtga cagccgggcc tttagcactg tacccctgac acctgtcccc cgccccagtg actecette etecacecet geggetacea geactecete taageaggee etecagttet 1680 1740 tetgetacat etgeaaggee agetgeteea geeageagga gtteeaggae cacatgtegg 1800 agectcagea ceageagegg etaggggaga tecageacat gagecaagee tgeetcetgt 1860 ccctgctgcc cgtgccccgg gacgtcctgg agacagagga tgaggagcct ccaccaaggc gctggtgcaa cacctgccag ctctactaca tgggggacct gatccaacac cgcaggacac 1920 1980 aggaccacaa gattgccaaa caatccttgc gacccttctg caccgtttgc aaccgctact 2040 tcaaaacccc tcgcaagttt gtggagcacg tgaagtccca ggggcataag gacaaagcca 2100 aggagetgaa gtegettgag aaagaaattg etggeeaaga tgaggaeeae tteattaeag tggacgctgt gggttgcttc gagggtgatg aagaagagga agaggatgat gaggatgaag 2160 aagagatcga ggttgaggag gaactctgca agcaggtgag gtccagagat atatccagag 2220 2280 aggagtggaa gggeteggag acetacagee ecaatactge atatggtgtg gaetteetgg 2340 tgcccgtgat gggctatatc tgccgcatct gccacaagtt ctatcacagc aactcagggg cacagetete ecaetgeaag teeetgggee aetttgagaa eetgeagaaa tacaaggegg 2400 ccaagaaccc cagccccacc acccgacctg tgagccgccg gtgcgcaatc aacgcccgga 2460 2520 acgetttgae agecetgtte acetecageg geegeecace eteccageee aacacecagg 2580 acaaaacacc cagcaaggtg acggetegac ceteccagec cecaetacet eggegeteaa 2640 cccgcctcaa aacctgatag agggacctcc ctgtccctgg cctgcctggg tccagatctg 2700 ctaatgettt ttaggagtet geetggaaae tttgacatgg tteatgtttt taeteaaaat 2754

<400> 71

tgggggetge ggggeeggee cateegtggg ggegaettga gegttgaggg egegeggga 60 ggegageeae catgtteage eageageage ageageteea geaacageag eageagetee 120 ageagttaca geageageag etceageage ageaattgea geageageag ttaetgeage 180

<210> 71

<211> 2587

<212> DNA

<213> Homo sapiens

tocagcaget getecageag tecceaceae aggeceegtt geceatgget gteageeggg 240 300 ggetecece geageageea cageageege ttetgaatet ceagggeace aacteageet 360 ccctcctcaa cggctccatg ctgcagagag ctttgctttt acagcagttg caaggactgg accagtttgc aatgccacca gccacgtatg acactgccgg tctcaccatg cccacagcaa 420 480 cactgggtaa ceteegagge tatggeatgg cateeceagg cetegeagee eecageetea caccccaca actggccact ccaaatttgc aacagttctt tccccaggcc actcgccagt 540 600 cettgetggg acctectect gttggggtee ceatgaacce tteccagtte aacettteag gacggaaccc ccagaaacag gcccggacct cctcctctac cacccccaat cgaaaggatt 660 720 cttcttctca gacaatgcct gtggaagaca agtcagaccc cccagagggg tctgaggaag 780 ccgcagagcc ccggatggac acaccagaag accaagattt accgccctgc ccagaggaca 840 tegecaagga aaaaegeact eeageacetg ageetgagee ttgtgaggeg teegagetge 900 cagcaaagag attgaggagc tcagaagagc ccacagagaa ggaacctcca gggcagttac aggtgaaggc ccagccgcag gcccggatga cagtaccgaa acagacacag acaccagacc 960 1020 tgctgcctga ggccctggaa gcccaagtgc tgccacgatt ccagccacgg gtcctgcagg tccaggcctc cacaggtcca cacacaggca cagccaagcg tccagccaca ggagcatcct 1080 1140 ccagegeagg tgtcagtaca gecaecagag cagaeccatg ageageetea caeceageeg caggtgtcgt tgctggctcc agagcaaaca ccagttgtgg ttcatgtctg cgggctggag 1200 1260 atgccacctg atgcagtaga agctggtgga ggcatggaaa agaccttgcc agagcctgtg ggcacccaag tcagcatgga agagattcag aatgagtcgg cctgtggcct agatgtggga 1320 1380 gaatgtgaaa acagagcgag agagatgcca ggggtatggg gcgccggggg ctccctgaag 1440 gtcaccattc tgcagagcag tgacagccgg gcctttagca ctgtacccct gacacctgtc 1500 cccegccca gtgactccgt ctcctccacc cctgcggcta ccagcactcc ctctaagcag 1560 gccctccagt tcttctgcta catctgcaag gccagctgct ccagccagca ggagttccag 1620 gaccacatgt cggagcctca gcaccagcag cggctagggg agatccagca catgagccaa gcctgcctcc tgtccctgct gcccgtgccc cgggacgtcc tggagacaga ggatgaggag 1680 1740 cctccaccaa ggcgctggtg caacacctgc cagctctact acatggggga cctgatccaa 1800 caccgcagga cacaggacca caagattgcc aaacaatcct tgcgaccctt ctgcaccgtt 1860 tgcaaccgct acttcaaaac ccctcgcaag tttgtggagc acgtgaagtc ccaggggcat 1920 aaggacaaag ccaaggagct gaagtcgctt gagaaagaaa ttgctggcca agatgaggac

1980 cacttcatta cagtggacgc tgtgggttgc ttcgagggtg atgaagaaga ggaagaggat 2040 gatgaggatg aagaagagat cgaggttgag gaggaactct gcaagcaggt gaggtccaga 2100 gatatatcca gagaggagtg gaagggctcg gagacctaca gccccaatac tgcatatggt 2160 gtggacttcc tggtgcccgt gatgggctat atctgccgca tctgccacaa gttctatcac 2220 agcaactcag gggcacaget eteccactge aagtceetgg gecaetttga gaacetgeag 2280 aaatacaagg cggccaagaa ccccagcccc accacccgac ctgtgagccg ccggtgcgca atcaacgccc ggaacgcttt gacagccctg ttcacctcca geggccgccc accctcccag 2340 2400 cccaacacc aggacaaaac acccagcaag gtgacggctc gaccctccca gcccccacta cctcggcgct caacccgcct caaaacctga tagagggacc tccctgtccc tggcctgcct 2460 gggtccagat ctgctaatgc tttttaggag tctgcctgga aactttgaca tggttcatgt 2520 2580 2587 aaaaaaa

<210> 72

<211> 2898

<212> DNA

<213> Homo sapiens

<400> 72

tgggggetge ggggeeggee cateegtggg ggegaettga gegttgaggg egegegggga 60 ggcgagccac catgttcagc cagcagcagc agcagctcca gcaacagcag cagcagctcc 120 180 agcagttaca gcagcagcag ctccagcagc agcaattgca gcagcagcag ttactgcagc tecageaget getecageag tececaceae aggeecegtt geceatgget gteageeggg 240 300 ggetecece geageageea cageageege ttetgaatet ceagggeace aacteageet 360 ccctcctcaa cggctccatg ctgcagagag ctttgctttt acagcagttg caaggactgg accagtttgc aatgccacca gccacgtatg acactgccgg tctcaccatg cccacagcaa 420 480 cactgggtaa cctccgaggc tatggcatgg catccccagg cctcgcagcc cccagcctca caccccaca actggccact ccaaatttgc aacagttctt tccccaggcc actcgccagt 540 600 cettgetggg acctectect gttggggtee ceatgaacce tteecagtte aacettteag gacggaaccc ccagaaacag gcccggacct cctcctctac cacccccaat cgaaaggatt 660 cttettetea gacaatgeet gtggaagaca agteagacee eecagagggg tetgaggaag 720 ccgcagagcc ccggatggac acaccagaag accaagattt accgccctgc ccagaggaca 780

840 tegecaagga aaaaegeaet eeageaeetg ageetgagee ttgtgaggeg teegagetge 900 cagcaaagag attgaggagc tcagaagagc ccacagagaa ggaacctcca gggcagttac 960 aggtgaaggc ccagccgcag gcccggatga cagtaccgaa acagacacag acaccagacc 1020 tgctgcctga ggccctggaa gcccaagtgc tgccacgatt ccagccacgg gtcctgcagg 1080 tccaggccca ggtgcagtca cagactcagc cgcggatacc atccacagac acccaggtgc agccaaagct gcagaagcag gcgcaaacac agacctctcc agagcactta gtgctgcaac 1140 agaagcaggt gcagccacag ctgcagcagg aggcagagcc acagaagcag gtgcagccac 1200 aggtacagcc acaggcacat tcacagggcc caaggcaggt gcagctgcag caggaggcag 1260 agcegetgaa geaggtgeag eeacaggtge agceecagge acatteacag eececaagge 1320 1380 aggtgcagct gcagctgcag aagcaggtcc agacacagac atatccacag gtccacacac aggcacagec aagegtecag ecacaggage atcetecage geaggtgtea gtacagecae 1440 1500 cagagcagac ccatgagcag cctcacaccc agccgcaggt gtcgttgctg gctccagagc 1560 aaacaccagt tgtggttcat gtctgcgggc tggagatgcc acctgatgca gtagaagctg gtggaggcat ggaaaagacc ttgccagagc ctgtgggcac ccaagtcagc atggaagaga 1620 ttcagaatga gtcggcctgt ggcctagatg tgggagaatg tgaaaacaga gcgagagaga 1680 tgccaggggt atggggcgcc gggggctccc tgaaggtcac cattctgcag agcagtgaca 1740 1800 geogggeett tageactgta cecetgacae etgteeceeg ecceagtgae teegteteet 1860 ccacccctgc ggctaccagc actccctcta agcaggccct ccagttcttc tgctacatct 1920 gcaaggccag ctgctccagc cagcaggagt tccaggacca catgtcggag cctcagcacc 1980 ageagegget aggggagate cageacatga gecaageetg cetectgtee etgetgeeeg 2040 tgccccggga cgtcctggag acagaggatg aggagcctcc accaaggcgc tggtgcaaca 2100 cctgccagct ctactacatg ggggacctga tccaacaccg caggacacag gaccacaaga 2160 ttgecaaaca atcettgega ceettetgea cegtttgeaa cegetaette aaaaceeete 2220 gcaagtttgt ggagcacgtg aagtcccagg ggcataagga caaagccaag gagctgaagt 2280 cgcttgagaa agaaattgct ggccaagatg aggaccactt cattacagtg gacgctgtgg 2340 gttgcttcga gggtgatgaa gaagaggaag aggatgatga ggatgaagaa gagatcgagg 2400 tgaggtccag agatatatcc agagaggagt ggaagggctc ggagacctac agccccaata ctgcatatgg tgtggacttc ctggtgcccg tgatgggcta tatctgccgc atctgccaca 2460 agttctatca cagcaactca ggggcacagc teteccactg caagtccctg ggccactttg 2520 agaacctgca gaaatacaag gcggccaaga accccagccc caccacccga cctgtgagcc 2580 gccggtgcgc aatcaacgcc cggaacgctt tgacagccct gttcacctcc agcggccgcc 2640 2700 caccetecca geccaacace caggacaaaa cacceageaa ggtgacgget cgaccetece 2760 agececeact aceteggege teaaceegee teaaaacetg atagagggae etceetgtee 2820 ctggcctgcc tgggtccaga tctgctaatg ctttttagga gtctgcctgg aaactttgac atggttcatg tttttactca aaatccaata aaacaaggta gtttggctgt gcaaaaaaa 2880 aaaaaaaaa aaaaaaaa 2898

<210> 73 <211> 2883 <212> DNA

<213> Homo sapiens

<400> 73

60 tgggggctgc ggggccggcc catccgtggg ggcgacttga gcgttgaggg cgcgcgggga 120 ggcgagccac catgttcagc cagcagcagc agcagctcca gcaacagcag cagcagctcc agcagttaca gcagcagcag ctccagcagc agcaattgca gcagcagcag ttactgcagc 180 tecageaget getecageag tececaceae aggeecegtt geceatgget gteageeggg 240 ggctccccc gcagcagcca cagcagccgc ttctgaatct ccagggcacc aactcagcct 300 360 ccctcctcaa cggctccatg ctgcagagag ctttgctttt acagcagttg caaggactgg 420 accagtttgc aatgccacca gccacgtatg acactgccgg tctcaccatg cccacagcaa cactgggtaa ceteegagge tatggeatgg cateeceagg cetegeagee eecageetea 480 cacccccaca actggccact ccaaatttgc aacagttett tececaggec actegecagt 540 ccttgctggg acctcctcct gttggggtcc ccatgaaccc ttcccagttc aacctttcag 600 gacggaaccc ccagaaacag gcccggacct cctcctctac cacccccaat cgaaagacaa 660 720 tgcctgtgga agacaagtca gacccccag aggggtctga ggaagccgca gagccccgga tggacacacc agaagaccaa gatttaccgc cctgcccaga ggacatcgcc aaggaaaaac 780 gcactccagc acctgagcct gagccttgtg aggcgtccga gctgccagca aagagattga 840 ggagctcaga agagcccaca gagaaggaac ctccagggca gttacaggtg aaggcccagc 900 cgcaggcccg gatgacagta ccgaaacaga cacagacacc agacctgctg cctgaggccc 960 tggaagccca agtgctgcca cgattccagc cacgggtcct gcaggtccag gcccaggtgc 1020

1080 agtcacagac tcagccgcgg ataccatcca cagacaccca ggtgcagcca aagctgcaga agcaggegea aacacagaee tetecagage acttagtget geaacagaag caggtgeage 1140 1200 cacagetgea geaggaggea gagecacaga ageaggtgea gecacaggta cagecacagg 1260 cacattcaca gggcccaagg caggtgcagc tgcagcagga ggcagagccg ctgaagcagg 1320 tgcagccaca ggtgcagccc caggcacatt cacagccccc aaggcaggtg cagctgcagc 1380 tgcagaagca ggtccagaca cagacatatc cacaggtcca cacacaggca cagccaagcg tccagccaca ggagcatcct ccagcgcagg tgtcagtaca gccaccagag cagacccatg 1440 agcagcetea cacceageeg caggtgtegt tgetggetee agagcaaaca ceagttgtgg 1500 ttcatgtctg cgggctggag atgccacctg atgcagtaga agctggtgga ggcatggaaa 1560 1620 agacettgee agageetgtg ggeaceeaag teageatgga agagatteag aatgagtegg 1680 cctgtggcct agatgtggga gaatgtgaaa acagagcgag agagatgcca ggggtatggg gegeeggggg cteectgaag gteaceatte tgeagageag tgacageegg geetttagea 1740 ctgtacccct gacacctgtc ccccgcccca gtgactccgt ctcctccacc cctgcggcta 1800 ccagcactcc ctctaagcag gccctccagt tcttctgcta catctgcaag gccagctgct 1860 ccagccagca ggagttccag gaccacatgt cggagcctca gcaccagcag cggctagggg 1920 agatecagea catgagecaa geetgeetee tgteeetget geeegtgeee egggaegtee 1980 tggagacaga ggatgaggag cetecaecaa ggegetggtg caacacetge cagetetaet 2040 2100 acatggggga cctgatccaa caccgcagga cacaggacca caagattgcc aaacaatcct tgcgaccett etgcaccgtt tgcaaccget acttcaaaac ceetegcaag tttgtggage 2160 2220 acgtgaagtc ccaggggcat aaggacaaag ccaaggagct gaagtcgctt gagaaagaaa 2280 ttgctggcca agatgaggac cacttcatta cagtggacgc tgtgggttgc ttcgagggtg atgaagaaga ggaagaggat gatgaggatg aagaagagat cgaggtgagg tccagagata 2340 2400 tatccagaga ggagtggaag ggctcggaga cctacagccc caatactgca tatggtgtgg actteetggt geeegtgatg ggetatatet geegeatetg ceacaagtte tateacagea 2460 actcaggggc acagetetee caetgeaagt eeetgggeea etttgagaae etgeagaaat 2520 2580 acaaggegge caagaaeeee ageeeeaeea eeegaeetgt gageegeegg tgegeaatea 2640 acgeceggaa egetttgaca gecetgttea eetecagegg eegeecacee teecageeca acacecaqqa caaaacacec agcaaggtga eggetegaee eteccageee ecaetacete 2700 ggcgctcaac ccgcctcaaa acctgataga gggacctccc tgtccctggc ctgcctgggt 2760

| ccagatetge | taatgctttt | taggagtctg | cctggaaact | ttgacatggt | tcatgttttt | 2820 |
|------------|------------|------------|------------|------------|------------|------|
| actcaaaatc | caataaaaca | aggtagtttg | gctgtgcaaa | aaaaaaaaa | aaaaaaaaa | 2880 |
| aaa | | | | | | 2883 |